Editorial

INDUSTRY VIEWPOINTS

Laying It On The Line

IT appears as if the steel industry has lost its fight for the principle of contributory pensions. But it wasn't because it did not put up one of the best and most intelligent defenses in its history. It was really an offensive.

Top steel people have appeared in a new role. They have been aggressive, factual and articulate. But there has been a note not always present in the past. They have laid it on the line. They have captured the ear of the public. If this is any criterion of future action, much has been gained for management and labor in steel.

Philip Murray has been and still is an artful man with the public. He woos them with sentiment. He knows their language. But now steel has learned that if it wants to get its side to the ones who make the laws of the country its men must speak out. That speaking must be forceful, straight from the shoulder and factual; and yet in language that the majority of the people speak and understand.

Steel leaders have been at their best in this rough and tumble because they believe in what they say. But it is more than that. Statements from steel heads in recent weeks carry the ring of real down-to-earth talk. There is no tongue-in-cheek. There is no sugary expedient tone. Expediency appears to be doomed.

Take Irving S. Olds, U. S. Steel board chairman. He is a quiet man. He rarely if ever has raised his voice above a normal pitch. But last week he let go with news reporters in a way which got the attention the industry deserved—and respect for a plain simple approach. He made it plain as did Mr. Grace that the industry is not interested in any "back-to-work" movement. And why? Because neither of these two men nor others in steel want violence. That is plain talk.

Earlier in the fight Mr. Fairless traded blow for blow with Mr. Murray on the basic issues in the strike. And Mr. Randall of Inland made it plain that district union leaders were being prevented from making a good contract with their management people. Charley White cut through the fog saying there was nothing wrong with a strike if issues were not clearly resolved. An issue like the present one has to be fought out. And afterwards he believes nothing but good can come from the settlement, whatever it may be.

It makes a lot of difference that steel people are on the offensive. Their offers and remarks are in a new language. They are being listened to by the public. Let us not forget that behind all this is the hard and at times unappreciated work of the public relations men in all of these steel companies whose head men are now laying it on the line.

Tom C. Campbell

Editor

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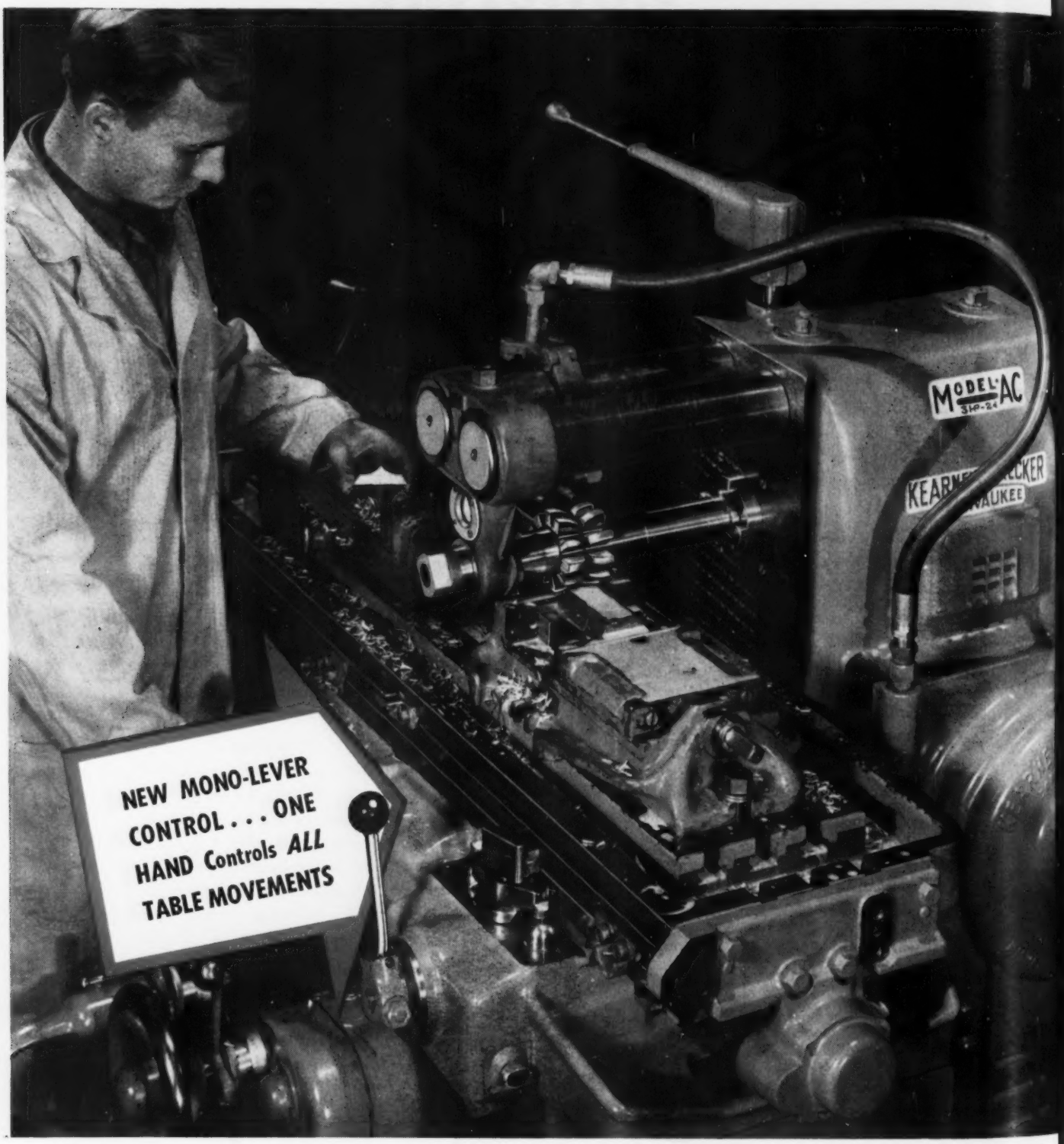
Now in the 3hp range..FOUR NEW MACHINES FEATURING



Camera study of good management at work! The job—form mill two radii on medium steel wedge plates. Fine finish required. With new Kearney & Trecker 3hp Model 24-AC machine, operator sets up automatic table cycle for reciprocal milling and easily paces production using climb and conventional milling alternately. RESULT: 28% savings in loading time, reduced scrap, more uniformity, less operator fatigue.

Steel Output Can Snap Back Fast

Total Loss Over 8.5 Million Tons

Most Products Now on Quota Basis

The Iron Age SUMMARY

IRON AND STEEL INDUSTRY TRENDS

AS this page goes to press it appears that the steel strike is over. Once the men go back to work steel will start coming out of the mills much faster than most people think. Here is the timetable; within a week after settlement steelmaking operations will be close to 25 pct of rated capacity. The week after that the rate will be boosted close to the 60-pct mark. Less than a month after the tieup ends the pre-strike level of the mid-eighties will be reached.

Steel company coal stocks are good for at least 6 weeks' operations. Before this time the coal strike will almost certainly be a national emergency within the meaning of the Taft-Hartley Law. If coal is not being mined by that time steel production will hit its second snag and there will be little doubt about a national emergency.

Openhearth Roofs Are Damaged

Steel lost as a result of the steel strike will total 8.5 to 9 million tons. Assuming normal steel demand at about 75 pct of rated steel ingot capacity, it will take the steel industry 5 to 6 months to make up the loss caused by the strike that began on Oct. 1. It will be something over a month before steel production can be pushed to full capacity operation.

Typical of the problems facing operating men is the condition of openhearth furnaces revealed in a survey of the major Chicago plants, completed within the past week by THE IRON AGE. It shows that falling brickwork has already reduced steelmaking capacity there by almost a third. The damage is in furnace roofs, particularly those that were half way or more through their campaigns.

Steel salesmen have not been idle while their mills were shut down. Those whose products were in a definite buyers' market in September have been canvassing customers for orders. These include men who sell stainless and alloy steels, wire and wire products, and cold-finished bars. These salesmen have been urging buyers to get their orders on the books for their own protection when the post-strike steel scramble begins.

Mills Will Have to Allocate Steel

There was less selling to do on flat-rolled products where supply was relatively tight before the steel strike started and it was clear they would be on a quota basis once steel production was resumed. It now appears, however, that so much selling has been done that almost all steel products will start off on quota basis—and be allocated by the mills to stretch the available supply.

First signs of the steel shortage are already here. Automobile company steel buyers are trying to sew up conversion deals as they were forced to do last year during the steel scarcity. Their major worry is sheets. So far Detroit estimaters put the cost of the steel strike at 2 weeks to a month loss of production. Some plants may shut down to catch up on inventories, others may slow down to stretch stocks out until they can be replaced.

Signs of Customer Caution Seen

Meanwhile the few mills still operating last week were picking up hints of customer caution. One such company received several cancellations during the past week. On asking why, its sales officials were told that the buyers felt it useless to continue to receive certain items when others needed to complete their product could not be had. Nor did the buyers feel it worth stockpiling these products "just in case." Though a steel scarcity was even then in sight there has been no panic buying—none of the 1947 hysteria that led people to buy any kind of steel they could get.

The steel ingot operating rate for this week is tentatively scheduled at 9.5 pct of rated capacity, unchanged from last week. Settlement of the strike would permit some plants to get furnaces going this week and the rate may therefore be revised.

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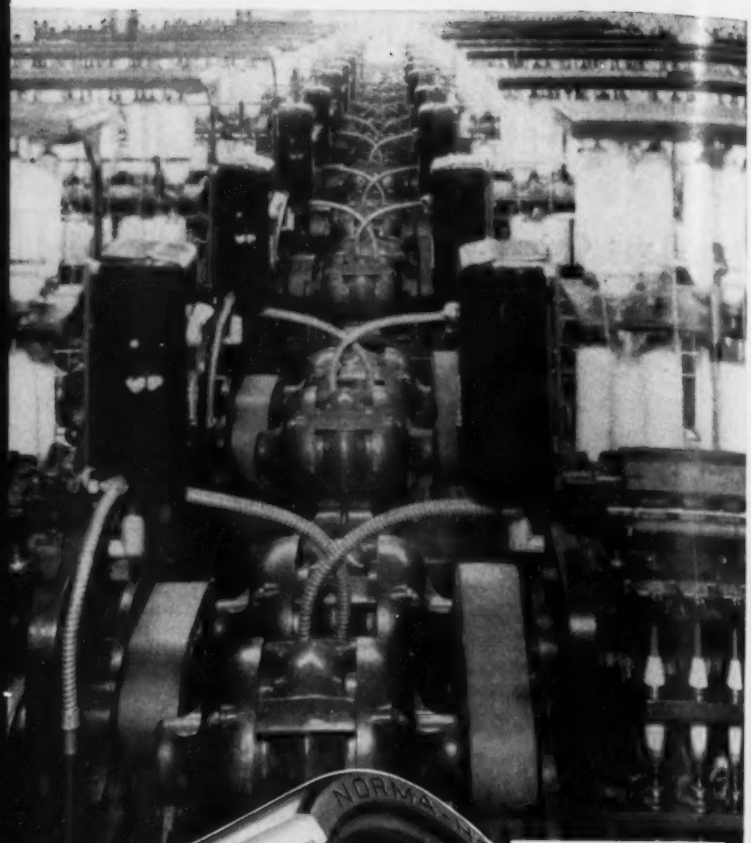
CASE HISTORY #819

646 Motors Operate 8 to 10 Years Without Relubrication or Bearing Failures ...and they're still going strong



Part of 86 textile motors equipped with "Cartridge" Ball Bearings. Bearings have not been relubricated during 10 years of operation.

Norma-Hoffmann

Patented "Cartridge" Bearings increase the "Life-Span" of Equipment

Records prove that Norma-Hoffmann "Cartridge" ball bearings give continuous performance in hundreds of applications without failure.

For example — 646 motors in 5 textile mills have been operating practically continuously for 8 to 10 years without relubrication. On inspection of many of the motors, the bearings showed no appreciable wear and the original grease was in good condition for many more years of operation.

Made to double-row width, Norma-Hoffmann "Cartridge" bearings have 100% more grease capacity than conventional width sealed bearings. The highly efficient seals keep dirt out, grease in. Factory-packed with Norma-Hoffmann's specially compounded "stability-tested" grease . . . grease that is highly resistant to oxidation and breakdown . . . assures dependable operation for long periods without regreasing.

Investigate the "Cartridge" ball bearing for your products whether they be motors, machine tools, pumps or other machinery. Our engineers are always available for consultation about your bearing applications. Write for their services.

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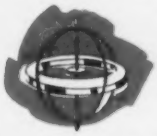
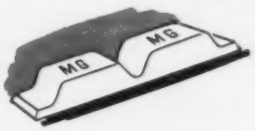
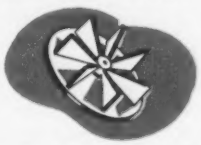
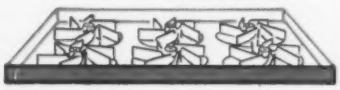
BONE TO PICK!

This appliance manufacturer was harassed by vacuum cleaner vibration. "Why not switch to a magnesium fan?" said his designer. "It would balance easier  and reduce the weight of the cleaner . . ." But the boss said he had a bone to pick with magnesium. So they put the idea up to Aluminum Company of America, light metal headquarters. They learned that simple shop practices make handling magnesium no problem.* Fellow manufacturers, they found, use over a million pounds of magnesium  every month. They received valuable books on designing and fabricating magnesium, plus technical advice. Now instead of using heavy, hard-to-balance fans like this,  they use light . . . uniform American Magnesium Die Castings.  They're saving money . . . and their smooth-running cleaner is sweeping the country.

*No change in insurance rates.

These two, free books on magnesium and our broad technical experience can help your products, too. Write Aluminum Company of America, sales agent for American Magnesium Products, 1701L Gulf Building, Pittsburgh 19, Pennsylvania.

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Accurate

"know how"

SPRINGMAKING "know how" —and, of course, modern manufacturing facilities—can mean a lot to spring users. The three springs illustrated above are good examples of how Accurate can slash spring costs with modern methods. Where previously multiple operations and intensive inspection was required in the manufacture of these springs, Accurate was able to develop means of producing each in a single operation so accurately that inspection by the users could be eliminated or substantially reduced. And the unit price of each is a fraction of a cent! Since tens of millions of each of these are in daily use the overall savings are very sizable.

We'd like to show those of you who are users of large quantities of springs how we can cut *your* costs. Write or call today.

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Springs, Wire Forms, Stampings

Fatigue Cracks

By Charles T. Post

The Range

The office edition of Funk & Wagnalls says its the "Mesabi Range." Yet, often as not, we've heard mining engineers refer to the "Mesaba," pronounced the same as the melon. And in your favorite family journal, an authority on such things, we saw reference last week to the "Mesabe."

The difference may be simply a matter of choice, like Charley or Charlie, or perhaps it's an offshoot of one of those foreign language nightmares where you have a different ending for masculine singular, masculine plural, feminine singular, feminine plural. Before the iron ore runs out and mining shifts to Labrador, we'd like to have someone settle it. There's probably a wide range of opinion.

Night Shift

Lindberg Engineering's peripatetic Bob Onan returned from Los Angeles with one of those clearance sale ("as much as ½ off") advertisements for office equipment. Item that caught his eye was:

"New Genuine $60 Walnut
Desks
NOW $69"

Whether this was a slightly delayed note on inflation, or a sudden burst of frankness, he wouldn't venture to say. He just pointed to the name of the advertiser: Nocturnal Office Equipment & Furniture Co. One of those slips that pass in the night.

Hot

A classified "Miscellaneous for Sale" advertiser in White Plains, N. Y., came up with this one last week:

ELIZABETHIAN dining room with refractory table and large cupboard, 2 arm and six side chairs, complete $350.

A rare antique set from the Harbison-Walker era, we would assume, and just the thing for serving hot dishes.

Talky-talk

Main reason we hate to eat in hash houses is that the counter-to-kitchen order code makes us nervous. We never know whether the counterman is ordering our bacon and eggs, turned and well done, or whether he is commenting in a possibly subversive fashion on our apparel or countenance.

A similar circumstance has recently thrown our sympathies entirely towards the Army in the current interservice controversy. We learn through *Armed Force*, unofficial service publication, that the masters of the seas apparently are graduates of Sam's Diner rather than Annapolis, as we previously had supposed. The Navy now bandies, with official sanction, a jargon that make the nation's greasy spoons look like beginners. Get this:

"Bagair" denotes "while traveling via air, baggage to accompany is authorized."

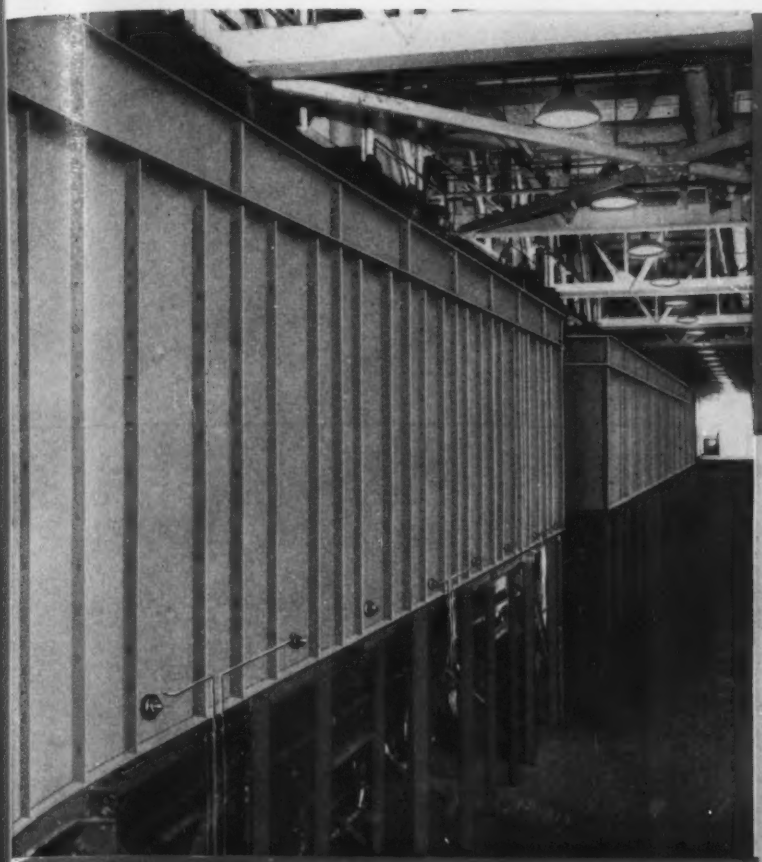
"Ford" has no reference to the motor car. It means "request names officers as ordered."

"Dusoda" indicates "for duty or for such other duty as may assign."

And here's the payoff:

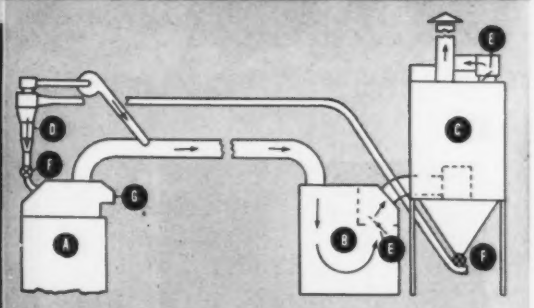
"Supcorgreeserve" is translated "students order to the Naval Supply Corps school are required to

Turn to Page 178



for every job ...

... Today there is a Better Way



DUSTUBE recovers 1/3 ton of valuable rubber processing material per day

Wherever rubber is made there's a dust problem, due to the finely powdered material used in processing. So it was at the Baltimore plant of Western Electric Company where miles of rubber-covered wire are made each day.

Determined to keep their rubber manufacturing operations as clean as possible, they discussed their problems with American's dust control engineers. The result . . . after close cooperation between Western Electric's Engineering Department and our own . . . was the development of the unique ventilating and handling system illustrated in the sketch. All dust created during loading and mixing is automatically removed and collected. It may then be returned pneumatically to the Banburys or stored as the situation demands. Empty bags are pneumatically conveyed to a bag collecting room — entrapped dust being removed in the process.

The heart of this recovery system is the American Dustube Collector. Eleven individual units provide continuous, automatic operation — filtering in excess of 100,000 cu. ft. of air per minute. In addition to keeping the plant clean and dust-free, the Dustube system salvages over 80 pounds of valuable compounding material every hour.

There are many advantages provided when the technical skill of American's engineers, in cooperation with the customer's staff, is coupled with the proven superiority of Dustube's design . . . a combination that may be just the answer to your own dust and product recovery problems. Your inquiry poses no obligation.

The basic reasons for the high efficiency of Dustube Dust Collectors are described in this 54 page illustrated catalog. It contains valuable engineering data. Write for catalog 72-A.

American dustube DUST COLLECTORS

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Iron Age *Introduces*

D. B. BARRETT, traffic director, Buick-Oldsmobile-Pontiac Assembly Div., General Motors Corp.

A. J. CAMPAU, director of purchasing and salvage section, General Motors Corp.

THOMAS K. CONNELLAN, manager Strand Garage Door Div., Detroit Steel Products Co.

A. J. Campau has been named director of the purchasing and salvage section of the GENERAL MOTORS CORP., Detroit. Mr. Campau has been with the company since 1916, when the organization acquired the Scripps-Booth Motor Co., with which he was associated. **Dudley B. Barrett** has been named traffic director of the Buick - Oldsmobile - Pontiac Assembly Div. for the company. Mr. Barrett has been employed by General Motors Corp. since 1929, when he started as a clerk in the traffic department at Pontiac Motor Div.

Henry B. Thackston has been appointed sales development manager of the southeastern division, B. F. GOODRICH CO., Akron, Ohio. Mr. Thackston is succeeded as Atlanta district manager by **Donald E. Lagarde**, who has had a similar post in the New Orleans district.

Charles L. Waggoner, general superintendent of the GENEVA STEEL CO., Geneva, Utah, a subsidiary of U. S. Steel Corp., has resigned. Mr. Waggoner came to the company from the Carnegie-Illinois Steel Co., and during government operation of the plant, served as supervisor of raw materials and superintendent of the blast furnace department. **James V. Mazurie**, formerly superintendent of the hot strip department of the company's Irvin works, has been named superintendent of rolling mills at the Geneva Plant. He succeeds **R. D. Peterson**, who has been named assistant to the general superintendent of the plant.

Oscar M. Havekotte has resigned as president of INTERNATIONAL DERRICK & EQUIPMENT CO., and as a director of DRESSER INDUSTRIES, INC.

Thomas K. Connellan has been appointed manager of the Strand Garage Door Div., DETROIT STEEL PRODUCTS CO., Detroit. Mr. Connellan has been with the company since its inception in October 1945.

H. R. Salisbury has been appointed president of AIR REDUCTION SALES CO., New York. Mr. Salisbury has been with the organization over 23 years in various executive capacities,. Appointed vice-presidents were **H. F. Henriques**, general sales; **J. J. Lincoln, Jr.**, railroad sales and sales services; **S. B. Stouffer**, distribution; and **N. L. Wisser**, field office management.

Gordon R. Findlay has joined the National RESEARCH CORP., Cambridge, Mass. Mr. Findlay will engage in research in the field of applied physics.

JOHN W. MILLER, superintendent of production planning, Kaiser Steel Corp.

B. A. BANNAN, general manager, Western Gear Works.

G. K. IWASHITA, manager product planning, air conditioning department, General Electric Corp.

F. E. Satterthwaite has been appointed quality control engineer of the plastics division in the chemical department of the GENERAL ELECTRIC CO., Pittsfield, Mass. In 1946 Dr. Satterthwaite came to the company as quality control engineer in the fractional horsepower motor engineering division at Fort Wayne, Ind. **G. K. Iwashita** has been named manager of product planning in the company's air conditioning department in Bloomfield, N. J. Prior to his appointment, Mr. Iwashita was manager of product research of the Seeger Sunbeam Corp., Evansville, Ind.

Kenneth A. Field has been appointed service manager of the Wellsville, N. Y., Works, WORTHINGTON PUMP & MACHINERY CORP., Harrison, N. J. Mr. Field joined the organization in 1945, and was previously connected with the Allis-Chalmers Mfg. Co.

John W. Miller has been appointed superintendent of production planning at KAISER STEEL CORP., Fontana, Calif. He succeeds **Tom Jones**, who has resigned. Mr. Miller came to the Kaiser plant in January, 1945, as assistant superintendent.

Peter VanWyck, formerly technical assistant in the research department, has been made assistant director of the experiment station, HERCULES POWDER CO., Wilmington, Del. He will be responsible for the work done by the cellulose products, explosives, and Virginia cellulose research divisions. **Richard S. George**, formerly manager of the naval stores research division, has been appointed assistant director of the experiment station, responsible for the work done by the naval stores, paper makers chemical and synthetics research division. **Edmund Winterbottom** has been appointed administrative assistant to Dr. Schultz at the experiment station, and **John T. Hays** has been named special assistant in the scouting research division.

Owen W. Gaudern has been promoted to the position of manager of purchases for the FLUOR CORP., LTD., Los Angeles. Prior to his promotion, Mr. Gaudern served as the assistant manager of purchases for the company.

C. Coyle Smith has been named assistant to the first vice-president of WILLYS - OVERLAND MOTORS, INC., Toledo. He succeeds Robert Montgomery, who has been promoted to the post of general parts manager.

B. A. Bannan has been appointed general manager of WESTERN GEAR WORKS, Seattle, and all affiliated plants. Mr. Bannan will continue in his position of vice-president and will directly control and supervise all manufacturing operations and commercial aspects of the Pacific-Western group. **B. J. Bannan** has been appointed assistant to the new general manager, and will coordinate manufacturing operations.

Marvin J. Alef has been appointed executive vice-president of the SAGINAW INDUSTRIES CO., Saginaw, Mich. For many years Mr. Alef has been associated with Mr. Joseph W. Fraser of the Kaiser-Fraser Corp.

Verne W. Helard has been appointed assistant sales manager of the fleet sales section, Ford Div., FORD MOTOR CO., Dearborn. Mr. Helard succeeds **George M. Catchpole**, who takes over special assignments in connection with truck and fleet sales activity.

S. L. Nicholson has been appointed purchasing agent of SERVEL, INC., Evansville, Ind. Prior to his appointment he was assistant purchasing agent of the company.

Alex Zuk has joined the LACLEDE-CHRISTY CO., St. Louis, as an engineer in the arch and wall sales division with headquarters in New York. Mr. Zuk came to the company after 10 years with the Westinghouse Electric Corp.

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Iron Age Introduces

Continued

JACK VICTORINE, general sales manager, Cooper Alloy Foundry Co.

Jack Victorine and **Morton C. Meyers** have been promoted to the positions of general sales manager and assistant sales manager respectively, of the COOPER ALLOY FOUNDRY CO., Hillside, N. J. Mr. Victorine has been sales manager for the past 8 years, and Mr. Meyers since 1945 has served as direct assistant to Mr. Victorine. **J. L. Lessman** has been named manager of valve and fitting sales for the company. Mr. Lessman joined the organization in 1946 as assistant foundry superintendent.

Max L. Murdock, former acting manager of the centrifugal pump department, Norwood, Ohio, Works, ALLIS-CHALMERS, Milwaukee, has been promoted to manager of the department succeeding **H. C. Gaton**, who has retired. **Woodrow Brixius,** formerly application engineer in the company's West Allis Works centrifugal pump department, has been named assistant to Mr. Murdock, and **Paul B. Hugenberg** has been appointed application engineer in charge of sales and orders.

Elden L. Auker has been named assistant district manager in the Michigan area, BAY STATE ABRASIVE PRODUCTS CO., Westboro, Mass. Since January 1948 Mr. Auker has been an abrasive engineer for the company.

Raymond Z. Oswald has been appointed vice-president in charge of replacement sales of the CLEVELAND GRAPHITE BRONZE CO., Cleveland. He was formerly president of Monmouth Products Co., which is now conducted as a division of the company.

David Lewis has been named general sales manager of the Lycoming Spencer Div., AVCO MFG. CORP., New York. Mr. Lewis formerly was an executive with the Noma Electric Corp.

Leroy Smith, chief statistician of the Centrifugal Pump Div., WORTHINGTON PUMP & MACHINERY CORP., Harrison, N. J., is retiring after 52 years with the company.

Downie C. Pate has been appointed general freight agent for the NEW JERSEY, INDIANA & ILLINOIS R. R. CO, South Bend, Ind. Retiring from the company is **Thomas A. Hynes,** vice-president.

MORTON C. MEYERS, assistant sales manager, Cooper Alloy Foundry Co.

G. B. LeVan has been appointed general manager, and **E. H. Broadhurst** works manager, of the Cyclops Division plant, Titusville, Pa., of UNIVERSAL-CYCLOPS STEEL CORP. For several years, Mr. LeVan has been assistant general manager and Mr. Broadhurst has been superintendent of the plant.

George R. Browder has been made assistant director of advertising and merchandising of the HUDSON MOTOR CAR CO., Detroit. Mr. Browder has had many years' experience in executive capacities with several of the largest manufacturers in the automobile business.

W. C. Kennedy has been appointed general sales manager of AIRQUIPMENT CO and AEROL CO., Los Angeles, subsidiaries of Lockheed Aircraft Corp. Mr. Kennedy joined Airquipment this year after 2½ years as assistant general manager of the Wheel & Rim Sales Co. of Toledo and Pittsburgh.

Henry T. Sulcer has been elected general manager of GRAVER WATER CONDITIONING CO., New York. **Edward W. Phelp** has been appointed assistant general manager. **S. D. Barr,** previously in charge of Eastern District sales, has been advanced to general sales manager with offices at New York. **Vincent J. Calise** will now head the technical division of the company.

Wiley G. Robinett has been appointed assistant comptroller of the GULF OIL CORP., Pittsburgh, replacing **John A. Ellen,** who is retiring. **Adam P. Young** has been appointed manager of sales accounting. **E. F. Franz,** formerly assistant manager of the general economics and statistics department, has been made budget director.

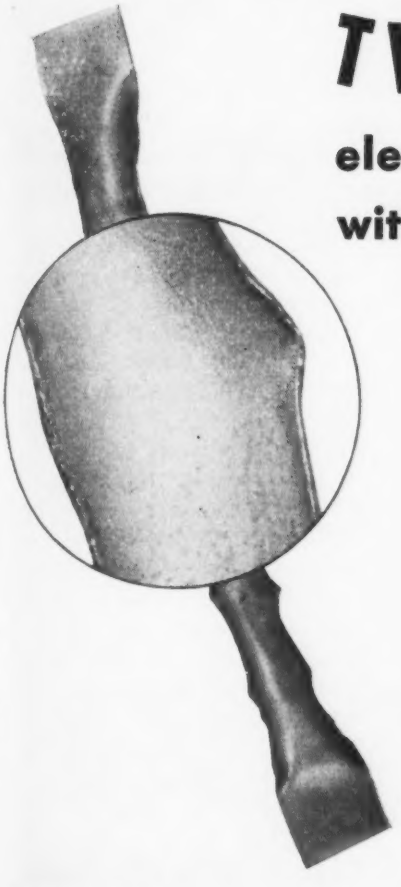
Bernard E. Meyer has succeeded **Frank Willmott** as Chicago district sales manager of the E. W. BLISS CO. Mr. Willmott has retired after 24 years' service with the company. For the past 4 months, Mr. Meyers, a sales engineer, has been on special assignment in the general sales organization in the executive offices in Toledo.

BERNARD E. MEYER, Chicago district sales manager, E. W. Bliss Co.

Turn to Page 150

TWIST TEST PROVES

electro zinc coated THINSTEEL withstands toughest fabricating operations



● The upper photograph shows how a ½" x 4½" piece of .0135" Electro Zinc Coated CMP Thinsteel was twisted tight and completely reverse twisted fifteen times. Below is shown the test sample straightened out after the fifteenth reverse twist.

The microscopic view shows a section after this gruelling test. Note that the tough, ductile, high-purity zinc coating still adheres tightly to the steel, its smooth, lustrous surface unmarred by flaking, peeling or cracking.

Here is proof that, whatever your fabricating operations, Electro Zinc Coated Thinsteel will come through unharmed.

If your product needs the corrosion resistance of a superior zinc coating — or if you can make it more attractive to the market by using zinc-coated steel, it will pay you to look further into Electro Zinc Coated CMP Thinsteel.

We'll gladly send you a sample to make your own tests.

THINSTEEL facts

Extra-Long Coils
— less downtime

Extremely Close Tolerances
— more parts per ton

Wide Range of Physicals and Analyses
— tailored to your needs

Gauges as Thin as .001"
— strength with lightness

C M P the **Cold Metal Products co.**
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GLOBAL LETTER

REVIEW OF WORLD MARKETS

Bill to nationalize the iron and steel industry will be passed . . . Indian government changes its attitude on the projected steelworks . . . Italian trucks assembled in Brazil.

London—Speculation about the possibility of an autumn election has been killed by Prime Minister Attlee's statement that there will be no appeal to the country this year. That means that the bill to nationalize the iron and steel industry will go through, although it can't be implemented until after the general election.

The conservatives have left no doubt in the public mind that they will kill the bill if they are returned to power. The future setup of the industry may therefore be said to be dependent entirely on how the voting goes at the election which must take place by next summer and will probably be held in the spring.

Labor Government's Stand

The people who think that even yet the Labor Government may have second thoughts on steel nationalization are engaging in obvious wishful thinking. The government has a hard task in front of it in extricating the country from its present financial predicament. It may be that the task will prove so onorous that a decision is reached to defer any more major changes and industrial interferences.

There seems to be no doubt, however, that the bill will get on the statute book. Once it is there, and providing the Labor Party is again successful at the polls, it will remain as a constant threat to the industry.

Passage of the Steel Bill

The passing of the Iron and Steel Bill to the statute book depends first on the passing of the Parliament Bill. This latter bill is to be introduced for the third time in the second week of November. Thus under the present Parliament Act it will become law early in December, despite opposition from the House of Lords. The path will then be clear for the Iron and Steel Bill.

There is little likelihood of any compromise being reached between the two houses on the vesting date or the day on which the act would be brought into force. With the new Parliament Act operating it would then be possible to introduce and pass the steel bill for the second time in the new session and the bill would then automatically reach the statute book. The new session may begin either at the end of December or early in the New Year.

Indian Government Invites Participation in Its Steel Works

Calcutta—The Indian government has changed its attitude regarding the projected new steelworks. Latest indications are that it may not be entirely a State enterprise. Private enterprise, both Indian and foreign, may be invited to participate.

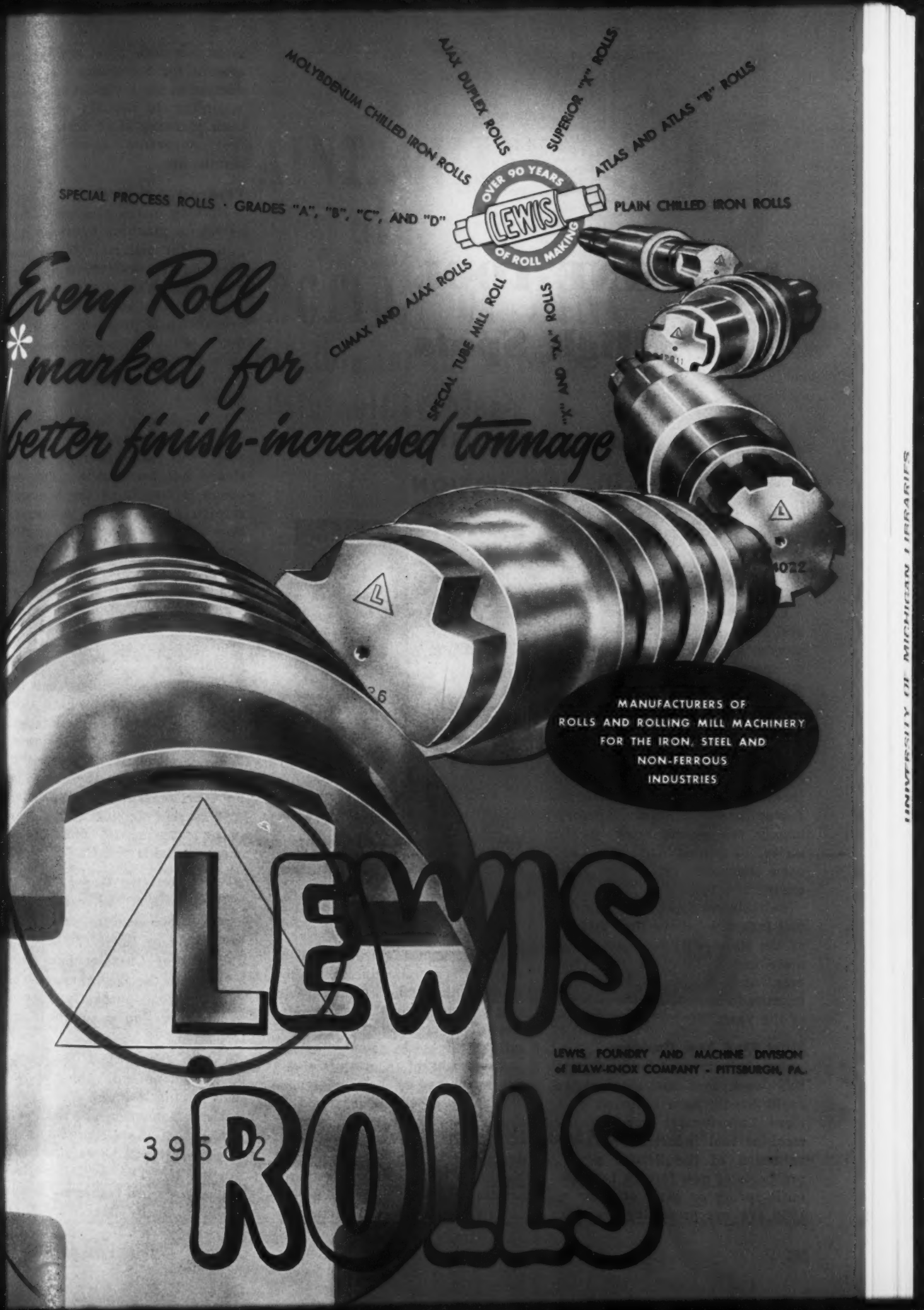
Meanwhile, practical steps to launch the project are temporarily suspended because if private interests are included in the ownership they will have to be included in the decisions involving design and management of the plant.

The two existing Indian producing units are at the moment both considering means of raising additional money for their own steelworks. It is unlikely that they will be able to take part in the new venture. It would appear that this leaves only foreign enterprise to call upon. Devaluation and the enhanced cost of dollar plant would give British interests the advantage if they wished to take part.

Brazil Builds Its First Trucks

Sao Paulo—Last January Fabrica Nacional de Motores S. A. (F.N.M.) signed contracts with Isotta Fraschini of Italy to manufacture the latter's D-80 truck and 100 hp diesel engine. At the start the Italian firm supplied the parts to be assembled in Brazil by F.N.M. The technical staff was also imported. Local manufacture

Turn to Page 182



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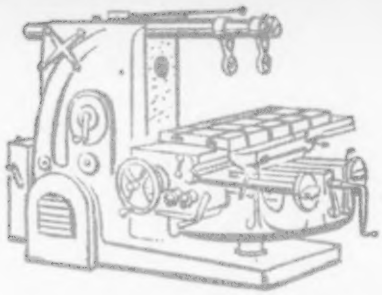

MACHINE TOOL High Spots

SALES, INQUIRIES AND PRODUCTION

by William A. Lloyd

Tool builders hope for quick strike settlement . . . Military aid spending uncertain.

Cleveland—Machine tool builders' hopes for a profitable fourth quarter appeared to hinge largely on speedy settlement of the steel strike, which at press time was boring into its fifth week.

As a key supplier to the mass-production industries, which are being brought to a reluctant halt by the strike, the machine tool industry's order volume has been fading gradually since approximately the second week of the strike. Business is spotty but some companies are getting some orders.

Reliable sources in the machine tool industry believe that the end of the strike will mean an immediate improvement in order volume, and perhaps substantially improved business for the balance of the year.

Must Find New Business

An industry spokesman said this week that the steel strike could hardly have occurred at a more unfortunate time for the machine tool industry. With devaluation of the British pound, prospects of new foreign business until spring or early summer of 1950 are not promising, particularly for manufacturers of general purpose machines. In the interim, the industry must find new business primarily in the domestic market, which is practically paralyzed by the steel strike and where the uncertainties are only surpassed by the competition.

Lurking in the background is the military aid program, benefits of which for the machine tool industry are also rather uncertain. Neither the authorizing or appropriating legislation for MAP contains any set amount for machine tools, nor does it set any specific amount for increasing arms production in the recipient countries, according to officials who have been planning MAP since it was first suggested more than 6 months ago.

Program Not Settled

Nothing in the program is firm as yet. A planning figure of $100 million for materials to increase arms output overseas is still being used. This figure includes raw materials and machinery. No breakdown is presently available, but it is understood that machine tools will only be a part of the $100 million if this is the final figure.

No decision as to whether special or general purpose machine tools will be authorized or included has been made. This decision is largely in the hands of foreign governments, so long as they are tools that will increase arms output.

Procurement procedures will be identical to those used by ECA, which means that actual buying will be done by the foreign governments subject to U. S. approval.

Machine tool builders' best bet at the moment is to have their foreign agents or representatives keep after military purchasing officials in the foreign countries. It is understood that there need be no fear regarding purchases in soft currency countries, as there is no intention to finance purchases outside the U. S.

Detroit Activity Reported

In Detroit there has been a considerable amount of activity headed up by Chrysler Corp. All divisions of Chrysler have been active with the exception of Plymouth. Dodge apparently is going to buy some equipment for a new tool room.

Up to the present time there have been no indications of further buying for the Ford automatic transmission but there is a report that the Ford production of this unit will be carried on in Cincinnati. The initial production of the Ford transmission will probably be by Borg-Warner.

PAINTABILITY plus PROTECTION of ZINC

Now Possible for the Price of Paintability Alone

INCREASED corrosion resistance for hot dip galvanizing, acid or alkaline zinc plating and zinc base die castings can now be provided at the same time the surfaces are rendered paintable. New processes developed by Azed utilizing inexpensive addition agents for the zinc bath plus economical secondary treatments make possible a protected and paintable finish at no higher cost than other treatments which do not at all increase the corrosion resistance.

Azed paintability-plus-protection affords new opportunities to plants interested in marketing better products at no greater cost. Full details upon request.

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Above—100 hour salt spray test on hot dip galvanizing.

Tests conducted by Robert W. Hunt Laboratories.

Azed processes include protective finishes, bronze finishes, olive drab finishes, bright finishes and bright-protected finishes for zinc surfaces. Also acid detergents and accelerators for pickling.

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PUBLICATIONS

New publications that describe money saving equipment and services are available free and without obligation. Copies can be obtained by filling in the attached card and mailing it.

Blast Cleaning Machine

Bulletin 144-A, a 4-p. illustrated pamphlet, describes the redesigned 48 x 72 in. Wheelabrator Tumblast, an airless abrasive blast cleaning machine used for blasting steel forgings, gray iron castings, steel castings, malleable castings, as well as heat treated products. *American Wheelabrator & Equipment Corp. For more information, check No. 1 on the postcard.*

Piping Applications

Stainless steel and nickel alloy piping applications for anti-corrosion and anti-contamination installations are described in bulletin 485, a 32-p. profusely illustrated bulletin. *Taylor Forge & Pipe Works, Inc. For more information, check No. 2 on the postcard.*

Brazing Chart

Detailed information on selection and application of brazing and soldering materials is described and listed in 2-p. chart-bulletin. *Fusion Engineering. For more information, check No. 3 on the postcard.*

Abrasive Cutting Disk

A hard, sharp, heat-defying, non-softening abrasive cutting disk is described in new pamphlet by the makers of Speed-Wet Disc. *Behr-Manning. For more information, check No. 4 on the postcard.*

Concrete Handling Truck

A concrete handling truck with 14 cu ft or 3000 lb load capacity, that has 3 speeds forward with a top speed of 15 mph, and that can be completely turned around in its own length, is described and illustrated in 2-p. sheet. *Contractors Machinery Corp. For more information, check No. 5 on the postcard.*

German Machine-Catalog

An 84-p. catalog showing equipment of member companies of Amertool has been prepared in German for European distribution. Specifications and illustrations of machine tools and metalworking equipment are shown. *Stenzel & Co. For more information, check No. 6 on the postcard.*

Casting Service

Illustrated 8-p. booklet describes foundry facilities for casting gray iron by the electric furnace process, and lists comparisons with castings produced by the regular cupola method. *Superior Foundry, Inc. For more information, check No. 7 on the postcard.*

Packing Methods

Methods for the safe packing and shipping of products through the use of steel straps are listed in 24-p. booklet. *Signode Steel Strapping Co. For more information, check No. 8 on the postcard.*

Hydraulic Lift Trucks

Platform and pallet type hydraulic lift trucks as well as portable hydraulic elevating tables and high-lift trucks are illustrated and described in 4-p. pamphlet. *Lyon-Raymond Corp. For more information, check No. 9 on the postcard.*

Side-Dump Trailer

An automatic side-dump trailer that loads or dumps completely at either side and locks in five positions is described in 2-p. sheet. *Champion Co. For more information, check No. 10 on the postcard.*

Custom Built Racks

Paragon custom built racks for the storage of rear axles, tote pans, transmissions, rims, bench pans, tires, wheels, motors, and drums are described and illustrated in 4-p. pamphlet. *Paragon Construction Co. For more information, check No. 11 on the postcard.*

Atmospheric Air Torches

Torches utilizing atmospheric air and propane or acetylene for use on radiator, body, or battery repair; electrical, tinning and roofing work; for plumbing and painting

Turn to Page 156

OUR "WASHBOWL" WEIGHS 200 TONS*

The little girl gets a good bath in a washbowl. At Wisconsin Steel we use a somewhat larger "washbowl."

When producing Sulfite-Treated Steel, we give a ladle full of molten steel a "bath" by "washing out" abrasive inclusions. The result—*a more machinable finished product with an absolute minimum effect on physical properties.*

To discover how Wisconsin Sulfite-Treated Steels can benefit you, contact our sales and technical representatives.

**Weight of ladle full of molten steel*

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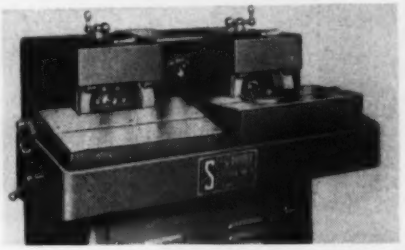
NEW PRODUCTION IDEAS

Continued

0.032 in. aluminum, cut to exact specifications in lengths and on the diagonal if necessary. Working from blue prints, the exact size and quantity of sheets required are fabricated, packaged and numbered in units that are easily identified and ready for use. The roofing is 2½-in. corrugated and corrugations, a full ⅞ in. deep. *Childers Mfg. Co. For more information, check No. 32 on the postcard on p. 37.*

Two-Wheel Tool Grinder

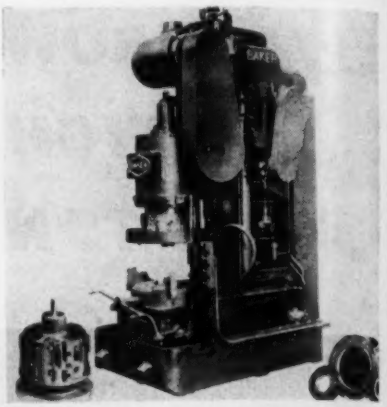
A new twin-wheel wet or dry tool grinder for carbide, Stellite, and high speed steel tools is designed for operator comfort, visibility and convenience. One step takes the operator from roughing to finishing wheel. Independent tilting tables have supports integral with the splash pan and base. Table tops have renewable steel wear plates and tables tilt 15° above to 30° below horizontal. Hinged steel wheel guards incorporate single 3-way coolant control valves and two spouts for each wheel. Grinding spindles and coolant pump are V-belt motor driven and fully enclosed. Crank handles at the top provide independent wheel adjustment. The type 10TD with 1½ hp motor has two 10-in. plate mounted cup wheels; the 14TD



with 3 hp motor uses 14-in. wheels. *Standard Electrical Tool Co. For more information, check No. 33 on the postcard on p. 37.*

Boring Machine

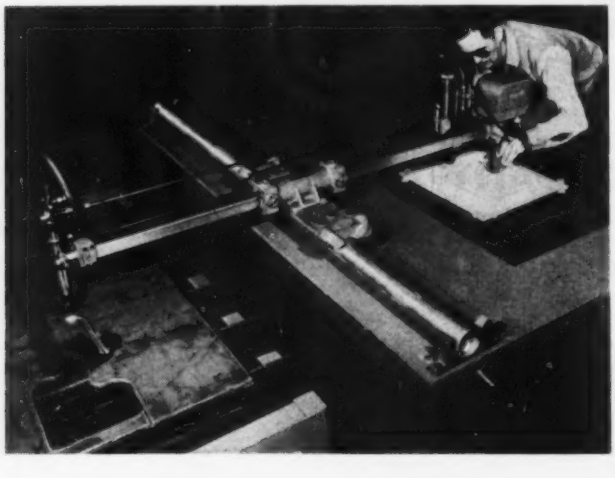
Increased productivity on pipe flange operations is accomplished on the new Baker 30H4 machine that bores, reams, threads, and counterbores flanges of 3 to 16 in. diam pipe. Murchey special full receding pipe taps with quick-change chasers and reamer blades perform the boring, reaming,



threading and counterboring operations in rapid succession. The machine is equipped with a 3-jaw scroll and chuck, with a worm and worm gear drive head, and is arranged with sliding gears providing two speeds plus pick-off speed change gears. *Baker Bros., Inc. For more information, check No. 34 on the postcard on p. 37.*

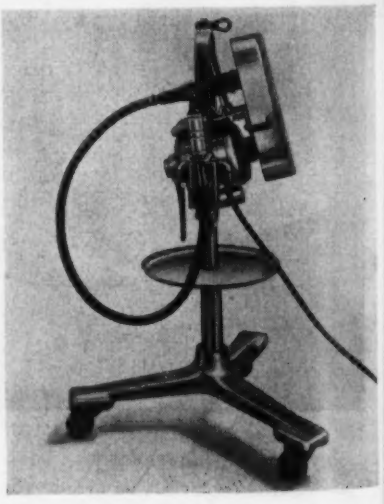
Shape-Cutting Machine

Steel up to 8 in. thick, in any shape within a 56x32 in. area, can be cut at speeds ranging from 3 to 30 ipm, with a new portable, low-priced, oxyacetylene, shape-cutting machine, the Airco No. 3 Monograph. Length of cutting area can be extended by adding tubular rail extensions. The machine will also handle straight-line, circle and bevel cutting jobs. The Monograph weighs 110 lb, the tubular rail 35 lb, making a portable machine that can be transported from shop to shop or to the work. The entire unit is packed in a sturdy carrying case that can be handled by two men and stored in a 7x1½ ft space. The equipment includes a manual tracing device, torch, tip, tubular rail, hose, straight edge, radius rod, and the case. *Air Reduction Sales Co. For more information, check No. 35 on the postcard on p. 37.*



Flexible Shaft Machine

An all-purpose flexible shaft machine, the Kellerflex, is said to perform equally well on a wide range



of work from heavy duty grinding to fine, delicate polishing. It can be mounted on floor and bench stands, or suspended. The machines are available in two standard speed ranges; one having speeds of 1000, 2500, 4250 and 6000 rpm, and the other having speeds of 2000, 5000, 8500 and 12,000 rpm. Different speed combinations are obtained by

Turn to Page 158

WHY

THIS COMMUTATOR Can Stand The Most Rugged Service, Yet Costs Less To Produce

SMALL MOTOR COMMUTATORS made by the Spring Division of the Borg Warner Corp., Bellwood, Ill., from Revere OFHC (Oxygen-Free High Conductivity) copper, exploded to show method of construction. After copper shell was stamped and formed on multi-slide machine and plastic molding material injected into it longitudinal slats were sawed just deep enough to completely penetrate the thickness of copper and thus form the segments, each of which are insulated electrically from one another and anchored firmly in the plastic.

IT was quite a complex problem the Spring Division of Borg Warner Corp. dropped into the lap of Revere's Technical Advisory Service. They were getting set to manufacture commutators for small motors and they wanted to select the best material for the job.

Here were the specifications: The material had to be the hardest possible yet still able to take the extremely severe forming operation which was to be done in a multi-slide machine. High hardness was necessary in order to combine maximum wear resistance with the ability to withstand the extreme centrifugal force developed in small motors operating at high speeds. In addition, in the molding operation, which is done after the copper shells have been formed, it was necessary to hold the diameter of the shell to within .001" in order to prevent the plastic from flowing between the mold and the outer surfaces of the commutator. An equal tolerance was also imposed upon the height of the solid cylindrical portion for the same reason. Also of great importance was the need for the cylinder wall being almost absolutely flat.

Because of long experience with somewhat similar problems Revere recommended trial of OFHC (Oxygen-Free High Conductivity) copper, four numbers hard. This was tested along with several other metals. The OFHC alone was found to produce excellent parts, and with tolerances so close as to be almost unbelievable in this type of operation. All other types of copper failed at the very sharp bend where the anchoring lugs join the side of the shell.

An unusual feature of these commutators is the plastic material used in the core. Tough, and unusual in composition, it serves both as insulation and as a mechanical connection between commutator and shaft without use of a bushing and key.

To determine if these commutators could *really* take it, test motors in which they were used were speeded up to 35,000 rpm. Although the wiring in the rotors practically exploded at that speed, there were no failures in the commutators, Temperature tests up to 400° F. were also made. Here again there was no damage to the commutator, though the rotor wiring was badly damaged due to the combination of centrifugal force and decrease in wire strength. Once again the unusual combination of properties of Revere OFHC copper had played a part in helping another one of the country's leading manufacturers produce an outstanding product at less cost.

Perhaps this or some other Revere Metal can be of help in improving your product—cutting your production costs. Toward that end we suggest that you get in touch with your nearest Revere Sales Office.

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On the ASSEMBLY LINE

AUTOMOTIVE NEWS AND OPINIONS

Machine tool experts tell about their operating experiences with transfer machines . . . Savings in direct labor have been substantial but indirect costs must be absorbed.

by Walter G. Patton

Detroit—Evidence that modern transfer machines installed in many auto plants are not only doing the job expected of them, but are operating at remarkably low cost was offered here last week before the Society of Automotive Engineers. Participating in the discussion were D. C. Burnham, manufacturing manager of Oldsmobile; O. R. Goodrich, supervisor, job evaluation, Packard Motor; R. T. Hurley, president of Curtiss-Wright Corp., and A. W. Zimmer, works manager, Reo Motors. E. T. Ragsdale, general manufacturing manager of Buick Div., GMC, was moderator.

In his talk, Mr. Burnham pointed out that Oldsmobile has been able to make a substantial cut in its direct labor costs through the use of machines in which parts move automatically from one self-indexing machine to another. Olds is also getting more uniform quality as a result of better clamping and more accurate locating of parts in the machine, he said.

Downtime Must Be Reduced

One of the problems involved in the operation of big transfer machines is to keep them running, Mr. Burnham told the Detroit section. If it requires 5 pct of operating time to change cutters and a transfer group has seven machines, he reminded his audience, 35 pct of the total operating time can be lost while changing tools. By developing better cutters, and designing tools to facilitate rapid changes and by other means, Olds has been able to cut its tool changing time to 10 pct, the speaker revealed.

Mr. Burnham outlined some of the methods Olds is using to improve the efficiency of its engine plant at Lansing. Doubling the number of teeth on certain cutters has increased cutter life in some applications from four to five times, he disclosed. Machines are being designed for ready accessibility. The company has also found it helpful to keep on hand a stock of gears, bearings and other essential machine parts likely to need replacement. As an additional step in cutting it downtime, 40 maintenance me have been given 30 hr of specia training on repairing transfer ma chines. This step has paid off sub stantially, Mr. Burnham believes

Direct Labor Costs Cut

Mr. Goodrich indicated tha Packard's experience with trans fer machines has also been bot satisfactory and profitable. H said that without making any al lowance for changes in labor pro ductivity since the war, cost rec ords show that direct labor ha been cut 34 pct on the company' 8 cylinder engines and 23 pct o the 6 cylinder power plants.

In his talk, Mr. Goodrich em phasized the fact that indirect la bor costs have increased 46 pc since Packard installed its trans fer machines but that improve output per man-hr and better qua ity of product have more than of set the increase in indirect cost

Machines Meet Requirements

An interesting comment by M Goodrich showed that in the pr war period, for a particular appl cation, indirect labor was only 8 pct of direct labor costs at Pac ard. During the first year of tran fer operation, this percentage h 26.3 pct. It has now been reduce to 12.3 pct.

Considerable emphasis w

with Single Cutters or with Multiple Cutters

—either way, you get Precision at Low Cost on

P&W Model "C" THREAD MILLERS

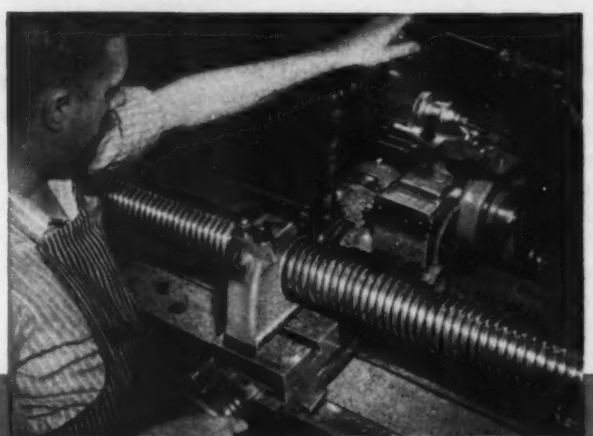
These modern Machines are designed and built to overcome the troubles normally encountered in heavy production thread milling by providing the versatility required: faster cutting speeds, finer finishes, longer tool life, and increased output — particularly in climb (gearwise) milling of worms and screws where finish and high production are essential.

P&W Model "C" Thread Millers are built at Accuracy Headquarters to be superior in every way for the production of extremely accurate lead screws and worms, and for ordinarily difficult multiple-start work requiring indexing. They are made in 4½", 6" and 12" diameter capacities with a wide choice of center to center distance.

P&W Attachments are available for both internal and external milling on work which may be cut with multiple thread milling cutters. They are applied without sacrificing the use of the Machine for regular thread milling with single cutters. Multiple thread milling cutters for use in the above Attachments are available in both shell and shank types. Bulletins list features — write for your copy.

ABOVE: PRECISION CONVEYOR SCREW. Single cutter milled this conveyor screw to the fine tolerance and finish specified.

RIGHT: TWO-START PRECISION FEED SCREW. Setup with double cutters on 6" x 120" Machine for precision milling of a two-start accurate feed screw. Both starts were finish-milled simultaneously.



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placed on the fact that a new transfer installation, if it is to be economical, must actually do more than the machines it is replacing. This is necessary in order to absorb the increase in indirect costs. The discussion indicated that transfer machines are meeting this requirement.

As an example, Mr. Zimmer told the SAE group that an eight-spindle, two-station machine at Reo had cut direct labor costs from 17.3¢ to 2.3¢. Another five-station drilling machine had reduced direct labor from 23.3¢ to 3.7¢. Still another installation, a ten-station drilling machine with 143 tools, showed a reduction in direct labor costs from 25.2¢ to 4.8¢. Total direct labor cost of the block has been cut from 65.8¢ to 13.3¢, it was disclosed. A generation ago, Mr. Zimmer said, the same sequence of operations cost 94¢.

An installation at Reo will amortize the difference between standard and special equipment through savings in 2½ year operating at only half of the rating of the machine, Mr. Zimmer told his audience.

Speeds, Feeds May Be Too Slow

In his remarks, Mr. Hurley emphasized the feeds and speeds in use today may be too slow. Once industry has a better understanding of materials, tools and machines it should be able greatly to improve productivity as well as absorb increased depreciation, he believes. "You can't send your depreciation home," Mr. Hurley reminded his listeners.

Based on investigations recently carried out at Ford Motor Co. under Mr. Hurley's direction, closely controlled annealing of cast iron made it possible to double tool life. Cutting speeds for cast iron of 1400 sfpm are entirely practical, Mr. Hurley believes, if the tools are properly designed and metal structures are properly controlled.

Mr. Hurley showed that in the case of pinions which were formerly machined at a rate of 175 sfpm, Ford is now able to cut at a rate of more than 1000 sfpm. Actual time of the operation has been reduced from 1¾ min to 9 sec. The steel is annealed in a special salt bath process Ford has installed at its Canton forge plant.

NOW THERE ARE THREE: Seated in the millionth 1949 model Ford passenger car are the three Ford brothers, grandsons of the late Henry Ford, who are taking an active part in directing operations of the huge Ford empire. At the wheel is Henry Ford II, president. In the center is Benson Ford, vice-president-general manager, Lincoln Mercury Div. William Clay Ford, a company director, who recently joined the company is seated at the left.

Warns of Difficulties

The speaker warned that these advances in the rate of metal cutting do not come easily. Machines have to be carefully balanced dynamically, he pointed out. It has been helpful to use strain gages to study deflection. In some instances Ford has found a solution to its cutting problems only after using an electron microscope at 50,000 to 60,000 magnification. The free carbides that were causing the machining difficulty were not evident at 3000 magnification, Mr. Hurley indicated.

Mr. Hurley argues that slow cutting speeds may sometimes be responsible for tearing material or rewelding of the metal. The principles of cutting he advocates can be applied to grinding glass and the cutting of steel, cast iron, Inconel and other materials, he said.

Many of our best machines are underpowered, feeds and speeds are too slow and the machines themselves are not rigid enough, Mr. Hurley told the Detroit engineers.

Detroit Edison Turbine Cuts Fuel Use Two-Thirds

Unlike some other large industrial areas, Detroit has experienced no industrial power shortages during the entire postwar period. The electric facilities serving this metropolitan area have been crowded but the Detroit Edison lines have been equal on every occasion to the city's fast growing requirements for electric power. The industrial power consumption index compiled by the Detroit Board of Commerce has jumped 59 pct since 1940.

During the week of Oct. 22 the Detroit Edison Co. held a celebration signalizing the completion of a new 100,000 kw turbo generator at its Trenton Channel power house.

An interesting comparison is possible since the first 50,000 kw units were installed at Trenton just 25 years ago. The new generating unit, for example, will use just *one-third* of the amount of fuel required a quarter of a century ago to produce a kw-hr of electricity.

The new GE unit has a 23 stage tandem compound double flow turbine operating at 1800 rpm. The turbine and generator together are 86 ft 8 in. long.

The weight's in the load and not in the truck when frames, body panels, fenders, wheels and other truck structural parts are made of N-A-X HIGH-TENSILE. And while affording weight savings of up to 25% in section, the high physical properties of N-A-X HIGH-TENSILE insure superior strength and increased resistance to fatigue, corrosion, abrasion and denting.

This decrease in deadweight decreases on-the-job expenses, too. Trucks built with N-A-X HIGH-TENSILE consume less gasoline . . . require less maintenance . . . give longer service. And the excellent formability, weldability, and fine surface texture of N-A-X HIGH-TENSILE mean that you build them better, with no added fabricating problems.

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THE FEDERAL VIEW

THIS WEEK IN WASHINGTON

Congressional committees will dig into host of subjects vital to business during current recess . . . Monopoly study has top spot . . . Justice asks Standard Oil case review.

by Eugene J. Hardy

Washington — During the 3-month Congressional recess, the committees of Congress will be digging into a variety of subjects of vital interest to the business world. Some of this effort will be directed toward getting through the second session of the 81st Congress measures which failed of enactment at the session just closed (THE IRON AGE, Oct. 20, p. 42). Others will be fishing expeditions that may or may not result in the introduction of legislation.

Irrespective of the results, the many committees will be having a busy time. An IRON AGE tabulation reveals about 30 investigations and staff studies now underway.

House Group Studies Monopoly

The most important of these is the monopoly study of the House Judiciary Committee. Delving into every phase of business operations and the anti-trust laws, this investigation might eventually rival the gargantuan efforts of the old Temporary National Economic Committee. Of extreme significance is the emphasis placed on industrial bigness per se by Rep. Celler, Dem., N. Y., the committee chairman.

Also high on the list is the investment study of the Joint Economic Committee, covering all phases of private and public investment, taxes, depreciation allowances and other governmental factors. This committee also has subcommittees looking into monetary, credit and fiscal policies, the problems of low-income families, and unemployment.

Washington lobbying activities will get a thorough going over from a special House committee set up to handle this specific job.

Transportation problems are being blanketed by four active subcommittees of the Senate Interstate and Foreign Commerce Committee, covering domestic land transportation, aviation, communications and shipping.

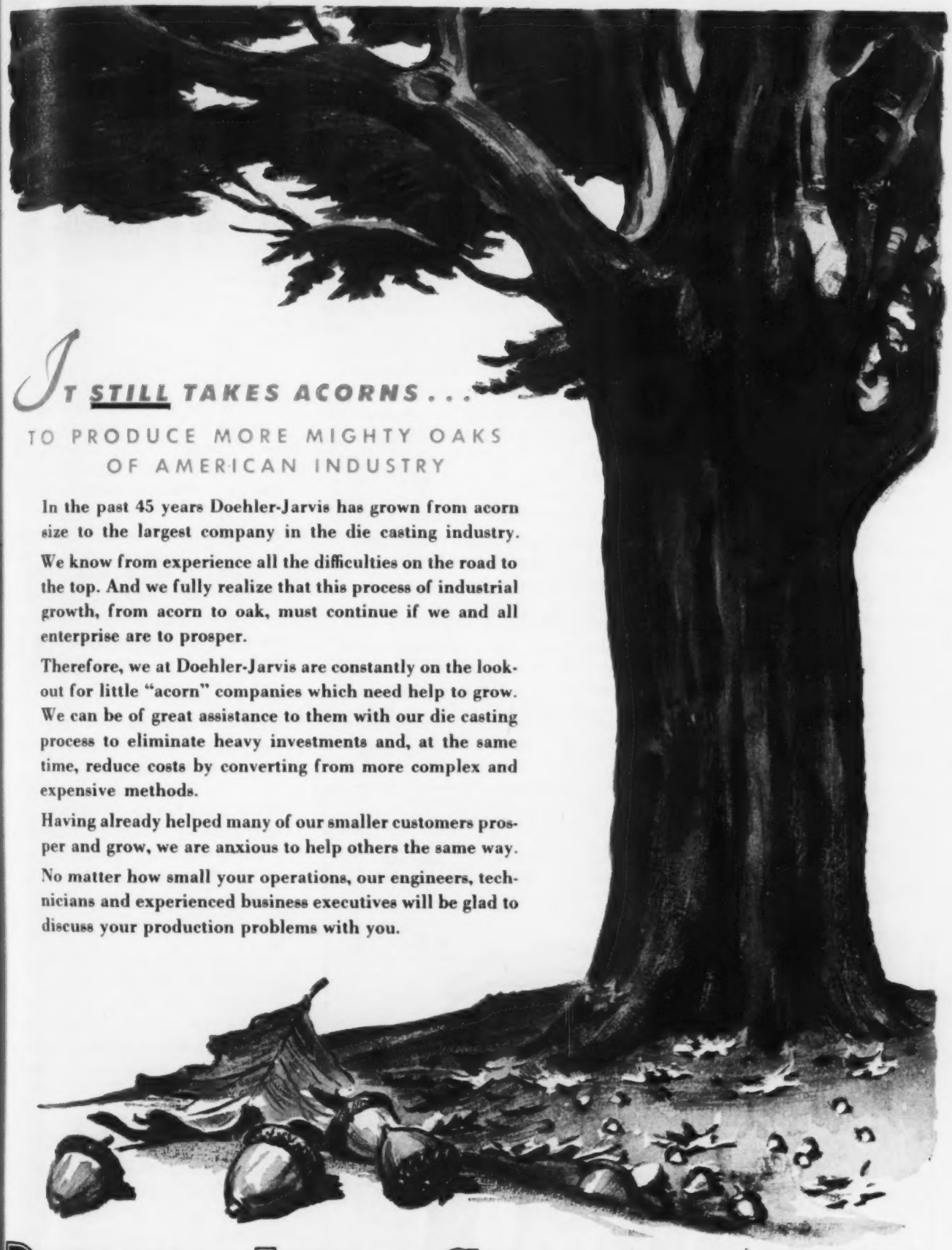
The House Labor Committee has included among its recess jobs a study of employer-employee relationships and another on the adequacy of workmen's compensation laws.

A broad look into the housing situation, authorized by special resolution, is being undertaken by the House Banking and Currency Committee.

Several Work on Banking

The staff of the Senate Banking and Currency Committee will devote most of its time to preparation of legislation on banking problems. Included are a new bank holding bill, Federal Deposit Insurance Corporation assessments, and legislation affecting the Home Owner's Loan Corporation. This committee will also make some study of the "Economic Expansion Act of 1949." While there is no great enthusiasm in Congress for this collectivist measure (THE IRON AGE, June 30, p. 76), hearings will probably be held, if for no other reason than to satisfy its influential, left-wing sponsors.

The small business subcommittee of the Senate Banking Committee will attempt to come up with some amendments to existing law that will guarantee small business a fair share of government contracts. Set-asides and more accurate definitions are likely results. The House Small Business Committee is going into



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this same problem. Other subjects on the agenda of the House committee include: an investigation of the alleged failure of the Federal Trade Commission to halt the growth of monopoly; an investigation of the backers of various small business organizations; and a study of abuses in the granting of dealer franchises in such commodities as electrical appliances. This body is aided in its work by a group of 17 labor, farm, and cooperative organizations.

A staff study looking toward the adoption of a national policy with respect to tin is underway in the House Public Lands Committee. Another major staff effort will be preparation of legislation relating to incentive payments to domestic metals mines.

The House Merchant Marine Committee is continuing its study of shipping and shipbuilding problems and has a special subcommittee delving into the feasibility of a sea-level canal in Panama as well as an alternate Nicaraguan canal. Several committees will also devote a little time to mustering arguments for the St. Lawrence Seaway.

Major Tax Legislation Due

Staff studies on tax problems are underway in the House Ways and Means Committee. It is expected that major tax legislation will be enacted next year. This group is also investigating the income status of insurance companies, with higher taxes from these firms as the ultimate goal.

The Senate Agriculture Committee is preparing several reports which will touch on such things as substitutes for palm oil and the use of alcohol mixtures in automobile engines. The Senate Expenditures Committee will continue its fight for enactment of the recommendations of the Hoover Commission on Government Reorganization and is expected to issue a progress report this week. This committee is also preparing a report on its investigation of "five-percenters" and other influence peddlers, which is sure to contain important recommendations regarding government procurement.

THE BULL OF THE WOODS — By J. R. Williams

AT LAST THERE GOES THAT OLD WORNOUT LATHE TO TH' SCRAP PILE, BUT I DON'T SEE HOW ANYBODY CAN FEEL ANY SORROW OVER IT'S PASSIN' OUT!
OH, THEM'S TH' ONES THAT WORE IT OUT GETTIN' AHEAD IN TH' WORLD, AN' THE OTHERS ARE TH' ONES IT WORE OUT, TRYIN' TO KEEP UP WITH THE WORLD!
11-4
J.R.WILLIAMS
THE FAREWELL PARTY
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Justice and Standard Oil Ask Review on Price Ruling

The Justice Dept. has joined Standard Oil Co. of Indiana in asking the Supreme Court to review a case which could have an important effect on legislative attempts to untangle the delivered pricing snarl. The main point at issue in the case involves Standard's "good faith" defense which the Federal Trade Commission held did not justify price discriminations. The Seventh Circuit Court, in an opinion written by New-Dealer Sherman Minton, President Truman's latest appointment to the Supreme Court, upheld the commission. The opinion did not deny that prices had been cut by Standard in good faith to meet competition, but held that competition had been injured at the retail level. The adverse competitive effect on Standard, if the company did not cut prices, was ignored.

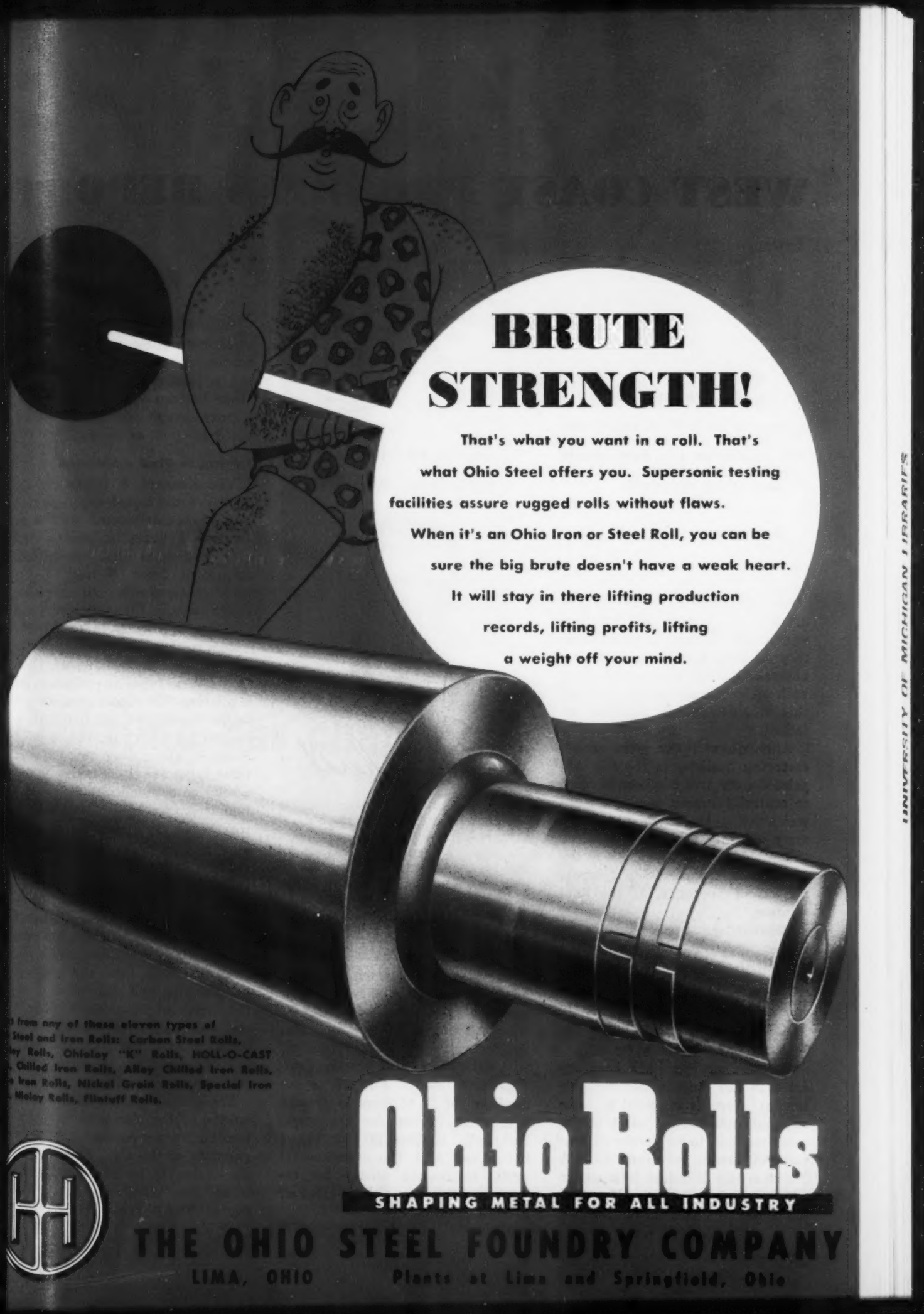
In the delivered price bill, which the Senate will consider next January, freight absorption would be legalized provided it was done in "good faith" to meet competition, hence the importance of the Supreme Court's action in this case.

The Justice Dept. has joined Standard in asking the high court to review the case, but waited until after it was certain that Congress would not enact legislation dealing with the problem.

GSA to Favor Small Business

The General Services Administration, Uncle Sam's largest nonmilitary buyer, is getting ready to issue procurement rules and new standard contract forms.

Jess Larson, GSA chief, says the new buying regulations will be written in such a way as to give preference to small businesses.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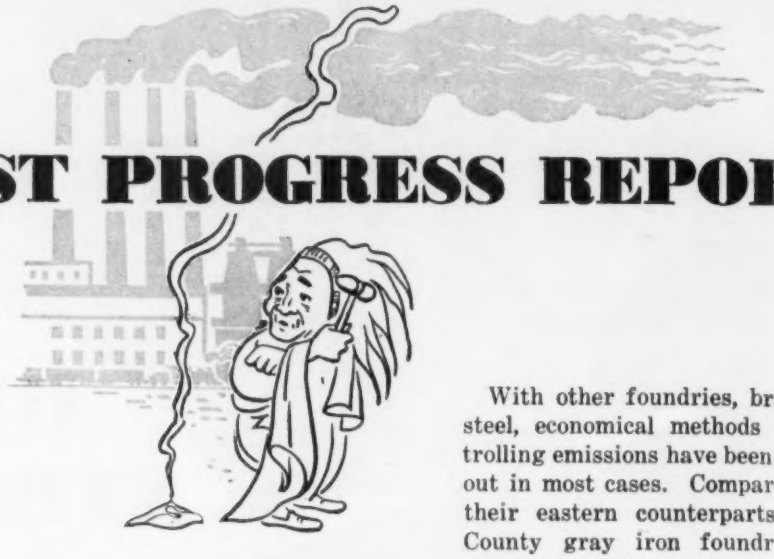
WEST COAST PROGRESS REPORT



Los Angeles gray iron foundries appear to be butt of smog control legislation . . . Few effects of steel strike apparent.

Digest of Far West Industrial Activity

by J. J. Reinhardt

Los Angeles—Gray iron foundrymen, who a year ago felt they were facing their greatest crisis as they adjusted to postwar sales and business tactics, today were faced with an even greater problem and this time it has a deadline attached.

Although virtually every manufacturing business in the Los Angeles County area has been ordered to control furnaces and equipment which pollute the air, few have had more difficulty than the gray iron group, which may even have to try a revolutionary new closed cupola method of operation as the final solution.

Peculiar weather conditions in September which blanketed the area with its "smogiest" day in history, have increased public pressure on county officials who have the job of cutting air pollution.

Will Conduct Symposium

Greatest pressure has been exerted in Los Angeles but the pattern set here is expected to have national influence as most equipment has had to be developed new to meet severe requirements. A National Air Pollution Symposium will be conducted at the Huntington Hotel in Pasadena on Nov. 10 and 11, sponsored by Stanford, Caltech, the University of California and the University of Southern California. Speakers are coming from the East as well as the West Coast.

Gray iron foundrymen now must adopt the method they consider best for catching the particles of coke ash sent into the air from their cupolas after experimenting with little success for 2 years. Citations have named Jan. 27 as the deadline for 32 of them to present firm commitments for the work. Strangely, another 30, who have not joined with the experimental group in pooling money for research, still have not been cited or given a deadline.

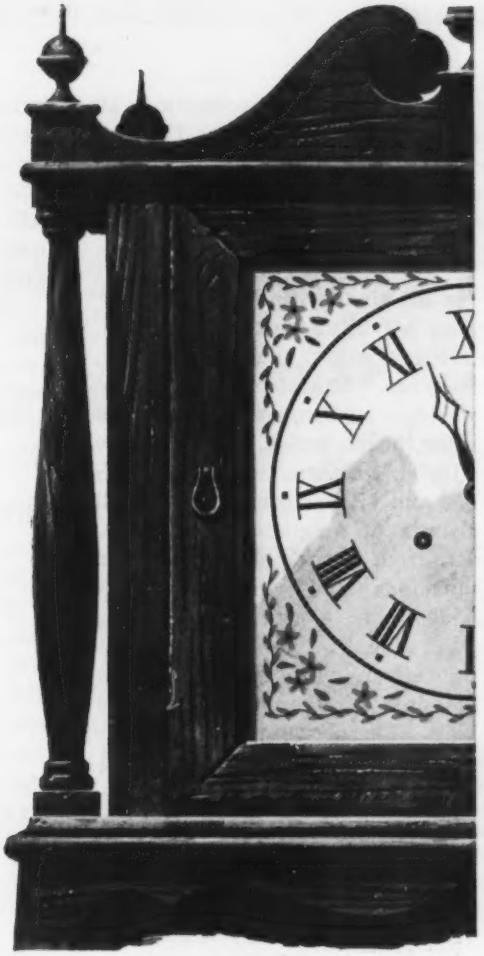
With other foundries, brass and steel, economical methods of controlling emissions have been worked out in most cases. Compared with their eastern counterparts L. A. County gray iron foundries are rated as small or medium.

Trying to Find a Solution

The Kennard & Drake Co. has produced the closed cupola method and has experimented with it as Renfrew Foundry in Glendale. Several foundries had anticipated equipment from Whiting Co. to meet requirements, but the latest meets only old requirements and not those presently in force. The orders to the foundries, setting the Jan. 27 deadline, however, claim that several types of equipment are available. The cooperative air pollution committee of foundrymen, headed by Earl Grover, of Apex Steel, is attempting to find what these types are. It is trying to find a solution economically feasible for foundries of this size. A few have threatened to move to adjoining counties.

The complexity of the problem is indicated in annual reports issued last week by both the county research group and by the Stanford Research Institute which has been retained by the Western Oil & Gas Assn. to look into the problem. Despite the best efforts of scientists from all major universities in the area and from these professional groups, the pollutants causing eye smarting on certain days still are undetermined.

While the experiments are going on, the county plan is to control all possible known contributors to the pollution of the air. This will put the county in an advance position when the exact ingredients are found. The difficulty in developing



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equipment and instruments has placed the officials under constant public pressure.

Control Facilities Expensive

W. L. Stuart, executive vice-president of Union Oil Co. and chairman of the committee of smoke and fumes for the Western Oil & Gas Assn., reports that his industry alone has spent $750,000 in research already and $10,365,000 in facilities to control or eliminate smoke and fumes. Just prior to the strike, the Bethlehem and Columbia steel mills were ordered to get commitments on their equipment, which will cost close to $750,000.

The Stanford Research Institute now says it has completed 80 pct of the research needed. It has found that smog is caused when the inversion layer drops below the 5000-ft mountain peaks so that the contaminants in the air are trapped. Smog is formed, it has been found, when the layer remains over the area for 3 days or more, picking up particles and finally bringing them over the city where warm air from the ground churns them until they reach the streets below.

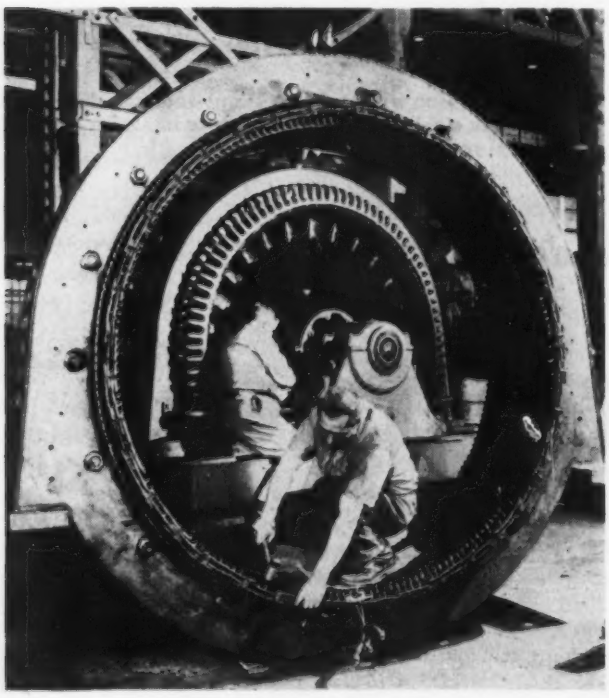
To determine what constitutes smog, the institute and county developed new instruments which measure in sizes of one-tenth to 10 microns. They find in the Los Angeles area no one contaminant causes smog, but a combination of them does the damage.

Contaminants Are Numerous

In the air they find such contaminants as sulfur dioxide, ammonia, nitrogen oxide, sulfur trioxide, aldehydes, filterable oil, soluble chlorides, carbon, ozone, hydrogen sulfide, fibers, pollen, tarry organic material, calcium, sodium, aluminum and silicon compounds, small amounts of magnesium, titanium, lead, iron, potassium and barium compounds and traces of compounds of copper, manganese, nickel, zinc, lithium, barium, strontium, silver, boron, vanadium, tin, chromium, zirconium, bismuth and cobalt. These are the main contaminants. Industries contributing these contribute to smog.

The research group says it now knows that visibility is reduced by carbon and metal particles, responsible for 10 to 50 pct decrease in visibility; transparent light-scattering crystals, including aluminum oxides and silica, 10 to 30 pct; small water-soluble and oil soluble particles and oil droplets (effect small); substances capable of forming moisture droplets in the air, principal of which is sulfur trioxide, 5 to 20 pct; and large soluble crystals such as sulfates, nitrates and chlorides, 0 to 80 pct. Particulate matter alone limits visibility, not gases which do not form particles.

Industry is far from being the only contributor as even sea salt spray and pollen as well as incinerators, auto exhausts, diesel burning and similar causes form a major part of the trouble.



ORE GRINDERS: Ten of the largest electric motors ever built in the West have been completed at Westinghouse Electric Corp.'s, Sunnyvale, Calif., plant for Anaconda Copper Mining Co., Anaconda, Mont. The motors will be used to drive Marcy open end rod mills for grinding copper and zinc ores. The motors are rated at 450 hp, 277 rpm, 2200 v, and are of the three-phase, 60-cycle synchronous type.

Fire Damages Structural Plant

Seattle — Fire damaged the structural steel plant of Pacific Car & Foundry Co. here last week to the extent of approximately $60,000. The welding shop and the tool and compressor room were destroyed but the main structural steel shop suffered less damage and the new welding shop under construction as a part of the enlargement program recently announced, was undamaged. All operations were suspended for several days.

Structural Facilities Available

Portland, Ore. — Pointer-Willamette Co. has announced that complete facilities for the fabrication of structural steel are now available through their plants here. G. D. Keerins, chief engineer, states that the plant here and that at Edmonds, Wash., can handle any type of structural steel work.

Changes Openhearth Practice

Fontana, Calif.—Since the blowing in of the second blast furnace at the plant of Kaiser Steel Corp., openhearth practice has been changed from the usual charge of 35 pct molten iron to more than 50 pct.

This practice combined with excellent furnace life is expected to increase the overall ingot capacity of the plant to approximately 1,110,000 tons per year.

Northrop Reduces Its Personnel

Los Angeles—Although keeping its engineering staff intact, Northrop Aircraft has laid off some 500 workers in the last week, reducing its personnel to less than 7000.

IRON AGE
FOUNDED 1855
FEATURE ARTICLE

Retaining Bearings By Swaging

By C. H. AVERY and A. G. BRISACK

Process Analysts, Northrop Aircraft, Inc., Hawthorne, Calif.

SUMMARY: Development of new bearing retention techniques has resulted in weight reductions in aircraft bearing assemblies. Experiments by Northrop Aircraft have resulted in a swaging technique that reduces the section thickness of bearing housings without affecting thrust load capacities. The technique yields cost savings in parts and assembly.

INVESTIGATIONS of conventional methods of retaining ball, roller, and needle bearings through the use of bearing nuts, snap rings or bearing rings indicated that if these retainers could be eliminated and housing thicknesses reduced, considerable weight savings could be realized in bearing assemblies. Staking bearings accomplished the desired weight saving, but proved unsatisfactory under high thrust loading. Swaging along the entire periphery of the bearing, as shown in fig. 1, resulted in a lighter assembly capable of withstanding necessary thrust loading.

A series of swaging method tests were conducted by Northrop Aircraft, Inc., on extrusions, rolled sheet and plate of 75S-T6 aluminum, FS-1h magnesium, SAE 4130 steel heat treated to a tensile strength of 165,000 psi, and SAE 4340 steel of 200,000 psi tensile strength; and on cast alloys of 356-T6 aluminum, H-HT magnesium and SAE 4130 steel heat treated to a tensile strength of 165,000 to 180,000 psi.

A variety of types and sizes of bearings were used in the examinations. The bearings were: Halfco ASB 28, 3.5 in. diam; Torrington, AT-10SDA, 1.75 in. diam; and Fafnir, K-6A, 0.875 in. diam. In addition, hardened steel plugs of 0.75 in., 1.5 in., and 3.5 in. diam were used in place of bearings in many tests.

The purpose of the tests was to determine the best dimensions for the swaged material and the most satisfactory procedure for swaging.

Press swaging was tested using 1.750 in. diam bearings and housings. The press tools shown in fig. 2 and a Universal testing machine were used to press-swage the housings. A groove, as shown in fig. 3, was machined prior to swaging in 75ST aluminum, FS-1h magnesium

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wrought alloys, an aluminum casting alloy, and SAE 4130 steel of a 165,000 psi tensile strength.

Press swaging was successful for ductile materials such as steel and annealed aluminum alloys. A tool face angle of 30° to housing face was the most satisfactory. However, on materials of limited ductility, such as 75ST aluminum, FS-1h magnesium, and casting alloys, the ring cracked at the root of the groove during pressing. The push-out load results were high for the ductile materials, indicating that swage retention would be applicable for most retained bearings provided a method satisfactory for all commonly used alloys could be developed.

Since press swaging was not entirely satisfactory, spin swaging was investigated. It was surmised that, because only a small area at a time is worked during spin swaging, the bending stresses beneath the swaged area would be less than when the whole ring is press-swaged simultaneously. Using the same materials, bearings, groove type, and conditions as in the press-swaging tests, the housing rings were swaged over the bearings with a friction spin tool of the type shown in fig. 4, mounted in a drill press. Later, additional tests were made with the same tool mounted in a lathe to eliminate the play present on the drill press.

Spin swaging was not satisfactory when using a friction tool. The stronger and harder materials, such as 165,000 psi steel and 75S-T6 aluminum, grooved the tool face (Rc 61) rather than swaging over the ring. On softer materials such as 75SO aluminum, FS-1 wrought magnesium, and H-HT magnesium castings, results were satisfactory except for excessive galling that caused loss of ring thickness and strength of the housing ring.

From the tests a number of conclusions were drawn. The tool face angle necessary for optimum swaging conditions and the limits for depth and width of machined groove had to be determined. The effect of bearing diameter on the unit push-out load was not known. A roller type swaging tool would be necessary in production to produce satisfactory parts.

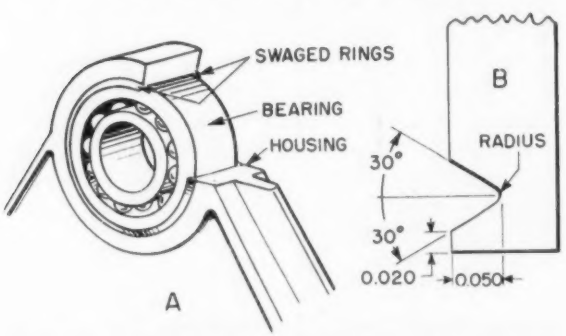


FIG. 1—Grooves machined in the housing are swaged over the edge of the outside bearing race, as shown in A. Details of the housing groove before swaging are shown in B.

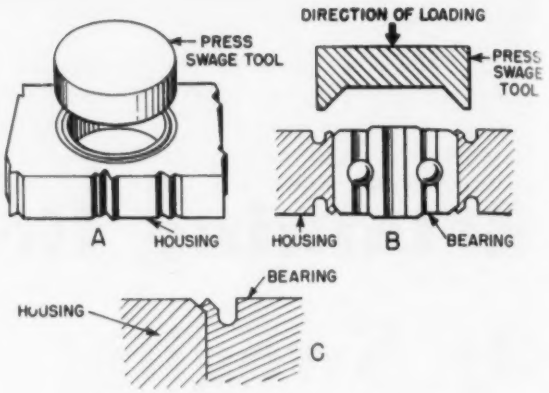


FIG. 2—For experimental work in swaging peripheral rings about bearings for retention, this simple press setup was used. A is the bearing housing; B is a cross-section of housing and bearing; and details of swaged housing and bearing are shown at C.

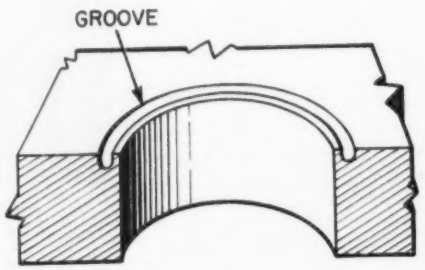


FIG. 3—Position of the groove machined in a bearing housing to be swaged.

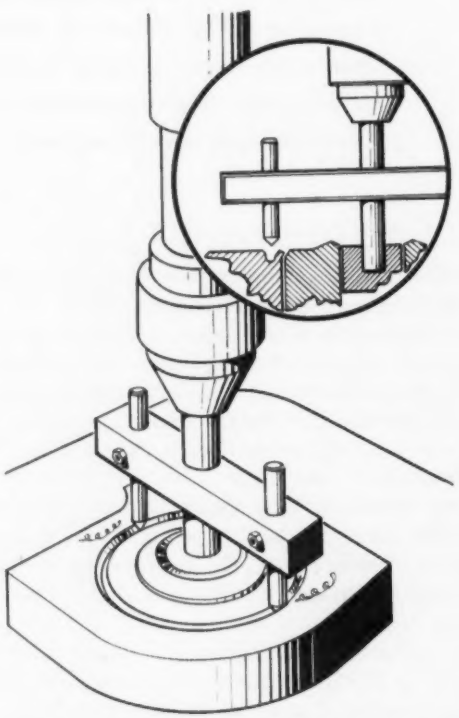


FIG. 4—This type of friction spin tool was used to swage bearing retainers. Ductile housing materials galled while harder materials scored this type of tool.

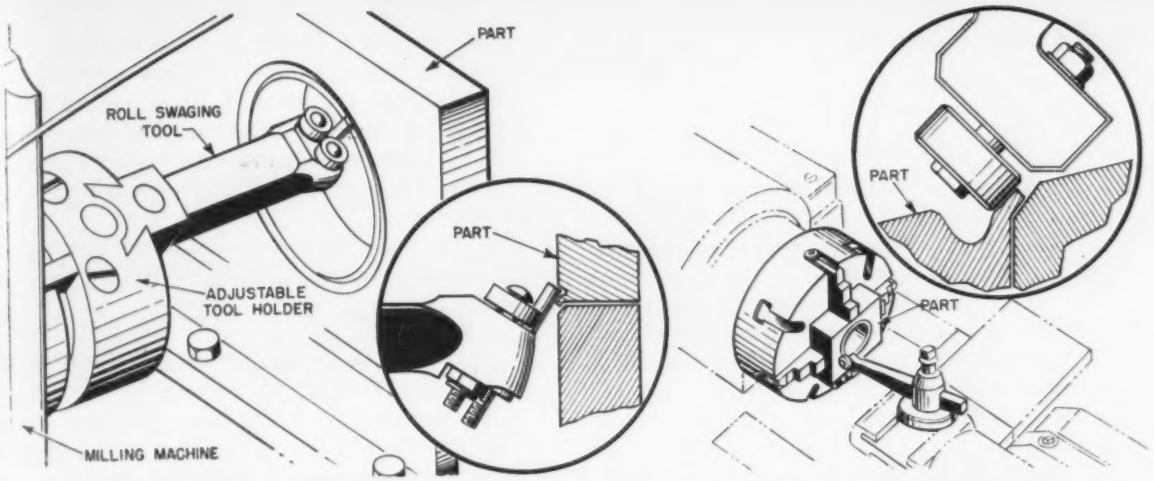


FIG. 5—A roller type swaging tool gave good results. At left is the setup used on a milling machine with the rolling tool supported by two backup rolls. At right is the setup in an engine lathe.

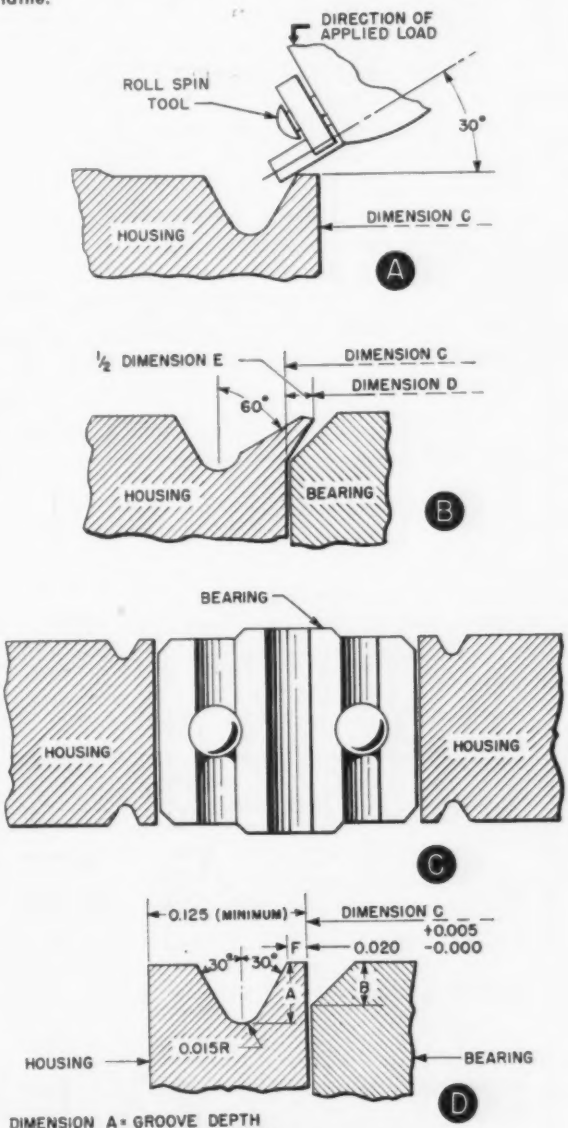
A machined ring, tapered from top to root, was necessary so that a greater root cross-section and, consequently, a greater resistance to axial load would be possible and ease of swaging still would be maintained. Push-out loads obtained were sufficiently high to allow use of the swaging method for retaining nearly all bearings subject to misalignment or vibrational axial loads.

Using a roller type tool, as shown in fig. 5, another series of tests were made on a lathe and a milling machine to determine optimum conditions for roll swage retention of bearings. These tests were made using housing diameters from 0.750 in. to 3.500 in., and all commonly used wrought and cast materials were investigated to determine design characteristics. The tool face angle was varied from 45° to 70° to the housing bore axis.

At an angle of 45°, cracking of the ring because of bending stresses occurred for the less ductile materials such as 75ST aluminum and FS-1h magnesium. At 70° there was insufficient clearance of the tool on some types and diameters of bearings. The optimum tool face angle for swaging was determined as 60° to the housing bore axis.

The ring was tapered from top to bottom on some specimens and parallel sides were used for others. It was found that the optimum ring shape had a taper from top to root of 30° to housing bore axis. When parallel sides were used, cracking occurred in forming the less ductile materials.

After exploring the capabilities and limitations of roll swaging and using the optimum conditions determined, additional tests were made using only 75ST aluminum in which the thickness of ring, depth of groove and the amount of swaging were varied to determine the dimensional limits and optimum conditions, as illustrated in fig. 6. It was found that the thickness of the machined ring, dimensions *F* in fig. 6D, was satisfactory in the range of 0.015 to 0.040 in. The optimum dimension for design was standardized at 0.020 in., +0.005, —0.000 in.



DIMENSION A = GROOVE DEPTH
DIMENSION B = CHAMFER DEPTH
DIMENSION C = BASIC BEARING DIAMETER
DIMENSION D = HOUSING DIAMETER AFTER SWAGING
DIMENSION E = (DIMENSION C - DIMENSION D)
DIMENSION F = THICKNESS OF MACHINED RING

FIG. 6—Design dimensions and details, for roll swaged bearing retainers. Data of design tolerances are tabulated in table I. At A is shown housing and tool relationship prior to swaging; B—housing and bearing relationship after swaging; C—bearing and housing design details, and D—dimensions of critical components of bearing-housing assembly.

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Retaining Bearings

Continued

The bearing thickness, +0.010, —0.000 in., was established as the housing thickness except for bearing chamfer depths less than 0.016 in. In such cases, the housing thickness is increased 0.010 in., +0.010, —0.000 in.

The maximum depth of groove, dimension *A* in fig. 6D, consistently satisfactory metallurgically, was found to be 0.050 in. The amount of swaging, dimension *E* in fig. 6B, was increased to 0.050 in. and was satisfactory metallurgically and physically for the sample tests. When the amount of swaging was increased beyond 0.050 in., shear defects occurred. To give a safety factor to amount for the limited number of tests and the variations in materials, the maximum value for the amount of swaging for design use was set at 0.030 in.

From these tests dimensions were standardized and tolerances set, as given in fig. 6 and in table I.

Using the standardized dimensions and tolerances, several specimens each of SAE 4130 steel (165,000 psi), SAE 4340 steel (200,000 psi), 75S-T6 aluminum, FS-1h magnesium, SAE 4130 cast steel (165,000 psi), 356-T6 sand cast aluminum, and H-HT sand cast magnesium were roll-swaged over 0.75 to 3.50 in. diam bearings. They were then loaded axially to failure, and the failure loads of the swaged rings recorded. In addition, a series of identical tests were run on 75S-T6 aluminum roll-swaged housings, to determine the variation in failure loads that would be obtained.

On the basis of these tests it was determined that a safe design load for roll-swaged bearings would be: Design load $= \frac{\text{failure load.}}{1.5}$ In designing for the roll swage process, however, the manufacturer's rated thrust load for any bearing must first be considered and then the design load for the roll swage process. Whichever is the lower load should be used for design.

A complete metallurgical examination was made of the roll swaging process. Specimens were taken so that all conditions of the tests were examined for cracks, metallurgical defects and microstructure. On these exploratory tests, cracking resulting from bending and shear defects from excessive swaging, were encountered. On all cracked rings, deformation bands, evidence of cold forged structure, were few, indicating that little forging and mostly bending had occurred. Examination of cross-sections of swaged bearing housing rings using the final standardized dimensions showed a sound forged microstructure, free from cracking and other defects.

FIG. strip

TABLE I

Design Data for Roll Swaged Bearing Retainers†

MATERIAL	Depth of Groove, In. (A in Fig. 6)	Depth of Chamfer, In. (B in Fig. 7)	Reswaging Permissible: Basis Bearing Diam Less Housing Diam After Swaging, In. (E in Fig. 6)	Reswaging Permissible: Load on Housing Circumference, Lb per In.	Permanently Installed Only: Basic Bearing Diam Less Housing Diam After Swaging, In. (E in Fig. 6)	Permanently Installed Only: Load on Housing Circumference, Lb per In.
Aluminum, 75S-T6	0.045 +0.005 −0.000	0.060 −0.035	0.010 ±0.002	220	0.025 −0.000 +0.005	550
	0.025 +0.005 −0.000	0.034 or less	0.007 ±0.002	210	0.015 −0.000 +0.005	450
Magnesium FS-1h	0.045 +0.005 −0.000	0.060 −0.035	0.010 ±0.002	82	0.025 −0.000 +0.005	205
	0.025 +0.005 −0.000	0.034 or less	.....	.....	0.015 −0.000 +0.005	165
Steel*	0.045 +0.005 −0.000	0.060 −0.035	0.010 ±0.002	325	0.025 −0.000 +0.005	810
	0.025 +0.005 −0.000	0.034 or less	0.010 ±0.002	435	0.015 −0.000 +0.005	650
Aluminum Casting, 356-T6	0.045 +0.005 −0.000	0.060 −0.035	.....	.....	0.025 −0.000 +0.005	.....
	0.025 +0.005 −0.000	0.034 or less	.....	.....	0.015 −0.000 +0.005	.....
Magnesium Castings, H-HT	0.045 +0.005 −0.000	0.060 −0.035	0.010 ±0.002	110	0.025 −0.000 +0.005	275
	0.025 +0.005 −0.000	0.034 or less	.....	.....	0.015 −0.000 +0.005	.....
Steel Castings, SAE 4130	0.045 +0.005 −0.000	0.060 −0.035	.....	.....	0.025 −0.000 +0.005	.....
	0.025 +0.005 −0.000	0.034 or less	.....	.....	0.015 −0.000 +0.005	.....

†—For tool face angle to produce results in this table, see fig. 6.
*—SAE 4130, 165,000 to 185,000 psi.
SAE 4340, 200,000 to 220,000 psi.

FIG. 1—Miscellaneous shapes produced from strip stock on cold roll-forming machines.

Designing Tools For Cold Roll-Forming

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SUMMARY: The design of rolls, guides, punches, coilers, shears, and other tools used for equipment for cold roll-forming metal sections is discussed in this article, with emphasis placed upon critical design factors. Formulae for specific design features are included, as well as factors affecting the performance of such tools.

COLD roll-forming, in which rolled or strip material is shaped by a series of progressive forming rolls, is becoming an increasingly important method of manufacturing. Aircraft industries employed this method during the war to form large quantities of aluminum into structural sections. Since the war, cold roll-forming has been used in producing many complex shapes such as edge trimming, window molding, venetian blinds, bicycle fenders and rims, weather stripping, and numerous other items such as those shown in fig. 1. Roll-formed parts compared with extruded parts are shown in fig. 2.

Given the dimensions for the cross section of the shape to be cold roll-formed, it is necessary to calculate the width of material required. Straight lengths on the cross section of the desired shape are added to the bend allowances, calculated from the following conventional formula, to determine this width.

$$BA = (0.01743 \times R + 0.0078 \times T)A$$

BA = the bend allowance, in.
R = the inside radius of the bend, in.
A = the angle through which the material is bent, degrees
T = the material thickness, in.

For example, to cold roll-form a channel 2 in. high x 1 in. wide, as shown in fig. 3, it would require material 4.686 in. wide.

Cold roll-forming of each shape presents individual problems in roll design. Certain principles apply to and govern the design and fabri-

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cation of tools to form all shapes. The first consideration in roll design for cold roll-forming is to determine the number of pairs of rolls or roll passes required to produce the desired shape.

In the early days of cold roll-forming, designers estimated the form of successive rolls and the number of roll passes required by rather makeshift methods. Such methods were inaccurate and the rolls generally required grinding or fitting to produce acceptable shapes. Many inaccuracies were compensated for in the final pair of rolls, the profiles of which were made to conform with that of the desired shape.

Even today the determination of the number of roll passes required to produce a complicated shape, remains partly a matter of judgment based on experience and depending on such factors as formability of the material and the shape of the section.

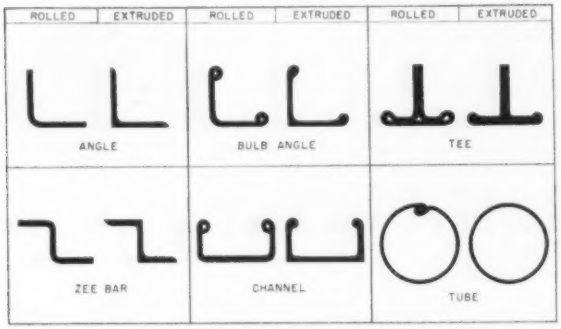


FIG. 2—Cold roll-formed shapes compared with equivalent extruded shapes.

From results obtained through years of experience, a longitudinal forming angle of 1°, 25′ has been found applicable as a guide in determining the number of roll passes required for simple shapes. In complex sections having multiple bends, each bend must be calculated individually for the number of passes required to form that bend. Then, after combining passes wherever practical, the total number of passes can be determined.

For simple shapes, the forming length of metal required to change from a flat cross section to the one desired will be equal to the height of the desired section multiplied by the cotangent of 1°, 25′. This can be expressed by the following formula.

$F = 40.436\ H$, where

F = the forming length, in.
40.436 = the cotangent of 1°, 25′,
and H = the height of the desired section, in.

For the 2 in. high channel shown in fig. 3,

$F = 40.436\ (2) = 80.872$ in.

This forming length divided by the fixed distance between shafts or spindles on the machine, and raised to the next highest whole number will give the number of passes required to perform the bending.

Cold roll-forming machines must have shafts large enough to carry rolls that are, in turn, large enough in diameter to form a given amount

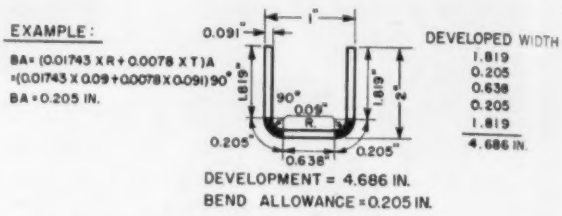


FIG. 3—Method of calculating the width of material required to cold roll-form the channel section shown.

of metal to the desired shape. For example, to form a deep hat section from thick material would require a machine that could accommodate rolls large enough in diameter to form the depth of section and shafts sufficiently large to withstand the loads encountered in forming thick material. Many sizes of machines, having various shaft diameters and horizontal distances between shaft centers, are therefore required to accommodate the wide variety of work encountered.

Dimensions governing roll design and the mold steel capacity of a few of the machines commonly employed for cold roll-forming are as follows:

Shaft Diam.	Horizontal Distance Between Spindles	Mild Steel Capacity, Area of Section,
In.	In.	Sq In.
1½	11	0.500
2	15	1.125
2½	18	1.750
3	24	2.500

Capacities given are dependent upon the shape of the section to be formed. Such machines are manufactured with up to 20 sets of spindles, with ten being the most common. Any number of sections having the same height will require anywhere from 4 to 20 passes, depending on the shape. A cold roll-forming machine having ten sets of spindles is seen in fig. 4. Only eight passes are being employed for the particular setup shown, and the first pass sizes the strip width and does no forming.

In forming the 2 in. high channel, fig. 3, on a machine having a horizontal distance between spindles of 15 in. the number of passes required would be 80.872 divided by 15, or 5.39. Raised to the next highest whole number, the work requires six passes. Using this same 15 in. and the 1° 25′, the height at the first pass will be: Tangent of 1° 25′ x 15 in. or 0.371 in. Similarly, the fifth pass height will be: Tangent of 1° 25′ x (5 x 15), or 0.02473 x 75, or 1.855 in. This is shown in fig. 5.

The side forming angles, S in fig. 6, can be determined for each pass by trigonometry, since

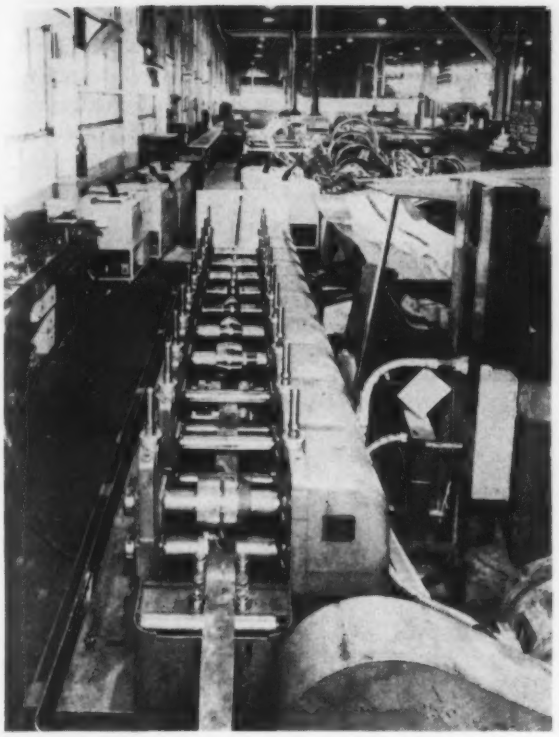


FIG. 4. Cold roll-forming machine having ten sets of spindles. Only eight passes are being employed for the setup shown.

the sine of S is equal to the pass height minus $\frac{X}{6ths}$ of the radius, plus the gage divided by 1.819 in. (the length of the leg on the 2 in. high channel. This formula is shown in fig. 6. These angles are used to determine the forming radii F at each pass and for each bend. The calculated side forming angles S are substituted for A, the bend allowance for BA, the forming radii F for R, and the thickness of the material for T in the following formula:

$$BA = 0.0175\ (R_1)\ A \text{ (where } R_1 = \text{Radius} + \frac{T}{2})$$

$$\text{or } BA = 0.0175\ (R + \frac{T}{2})\ A$$

$$\text{Substituting, } BA = 0.0175\ (F + \frac{T}{2})\ S$$

$$\text{Transposing, } F = \frac{BA}{0.0175\ S} - \frac{T}{2}$$

Calculations in determining the forming radii for the first two passes on the 2 in. high channel are given in fig. 7.

In the case of multiple bends on complicated shapes, the section must be broken down and each bend calculated individually to determine the number of passes required to form that bend. Then, after combining passes wherever practical,

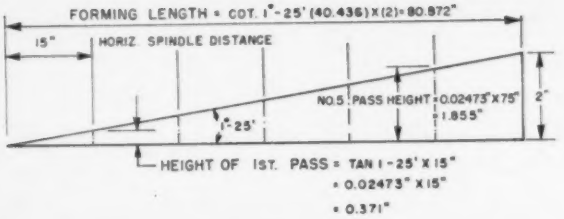
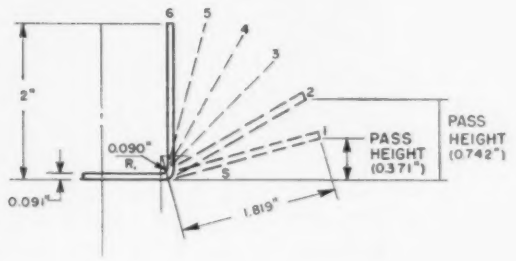

FORMING LENGTH = COT. 1°-25' (40.436) X (2) = 80.872"
15"
HORIZ. SPINDLE DISTANCE
NO.5 PASS HEIGHT = 0.02473" X 75" = 1.855"
2"
1°-25'
HEIGHT OF 1ST. PASS = TAN 1-25' X 15"
= 0.02473" X 15"
= 0.371"

FIG. 5—Schematic layout of the pass heights, forming angle, spindle distances, and forming length employed in producing a 2 in. high channel.



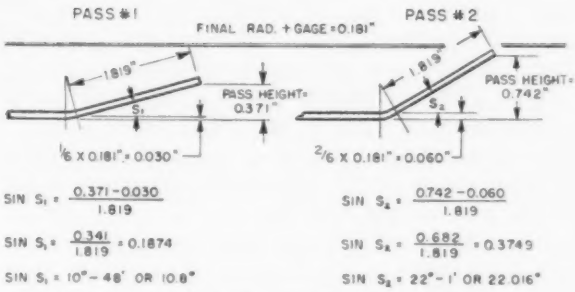


FIG. 6—Method of computing the side forming angles, S, for each pass on the 2 in. channel.

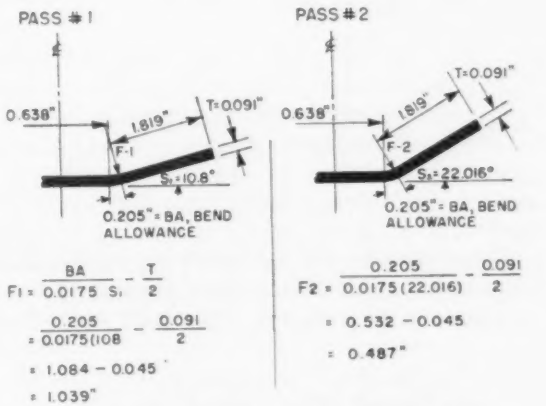


FIG. 7—Determining forming radii, F, by substituting known quantities in the above formula.

the total number of passes can be determined. In forming the z section shown in fig. 8, it was first necessary to form the end hooks to prevent stretching. To facilitate threading the strip through the machine, it is generally advantageous to maintain a shallow form in the first pass, ordinarily about 5°.

It is generally good practice, especially for more complicated shapes, to make a drawing,

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preferably ten times size or larger, to check the calculations. A ten diameter layout can be measured with a scale graduated in 1/100 in. to an accuracy within 0.003 to 0.004 in.

The first step in laying out the roll shapes is to determine the pitch line or neutral axis of the roll passes. This is generally a horizontal line bisecting the metal area so that there will be as much metal above the line as below. Major diameters of the rolls are measured to the neutral axis, and all other diameters are calculated accordingly.

The roll diameter for the first pass should be from 1/16 to ⅛ in. larger than the minimum allowable. Such a size minimizes the amount of tool steel required, while allowing stock for grinding. About 1/32 in. is cumulatively added to each calculated diameter, from the first pass to the last, to maintain a uniform roll pressure on the strip. This insures sufficient tension and prevents buckling. When interchangeable standard roll segments are used to form various sizes of channels and angles, this method of creating tension cannot be used. In such cases, it is sometimes necessary to install a brake at the in-feed end of the machine to prevent the coil of stock from over running the machine.

Segmental or split roll construction should be employed when such design will not interfere with satisfactory rolling of the part to be formed. Segmental rolls are more economical to manufacture and they often can be used with spacers to form various shapes. This eliminates the need for manufacturing a new set of rolls for each section.

In the final pass, the upper and lower rolls should be provided with mating radii. Other rolls, however, can sometimes be designed with no radius on the female roll. These rolls can be split at this point, as shown on the fourth pass in fig. 8, with obvious advantages in their manufacture.

Shoulder stops are ordinarily required on the forming rolls, particularly when forming sections that are not symmetrical. Such a shoulder stop is shown on the lower roll in fig. 9. The height, *H*, of the shoulder stop should be about 0.015 in. less than the metal thickness, *T*.

Tolerances on critical dimensions of the rolls are generally held to ±0.001 in. with the exception of the bores. Bore diameters for rolls used on small shafts are maintained with +0.0005, −0.0000 in. Concentricity of the bore with the forming surfaces of the roll is held to ±0.001 in.

Roll bores should be chamfered and undercut to prevent binding on the machine shafts during installation. Keyways in the rolls should be provided with fillets having a radius of at least 1/64 in., to prevent the formation of cracks during heat treatment. Roll radii not pertaining to the formed section should be made as generous as possible to facilitate feeding the material from pass to pass. Mating faces of roll segments should be relieved by a groove approximately 1/32 in. deep and ½ in. wide to simplify accurate fitting and to provide a space for stamping identifying numbers below the ground surface.

Rolls can be made from unhardened machine steel when relatively small quantities of simple shapes are to be formed. For most shapes, however, and for longer tool life on large production, rolls are generally made from a good grade of oil hardening tool steel. The rolls are turned on lathes, allowing 0.010 in. of stock on all surfaces for subsequent grinding. A hardness of from 58 to 62 Rc is obtained by heat treating and oil quenching.

The sequence generally employed in grinding rolls is to bore grind, then surface grind the

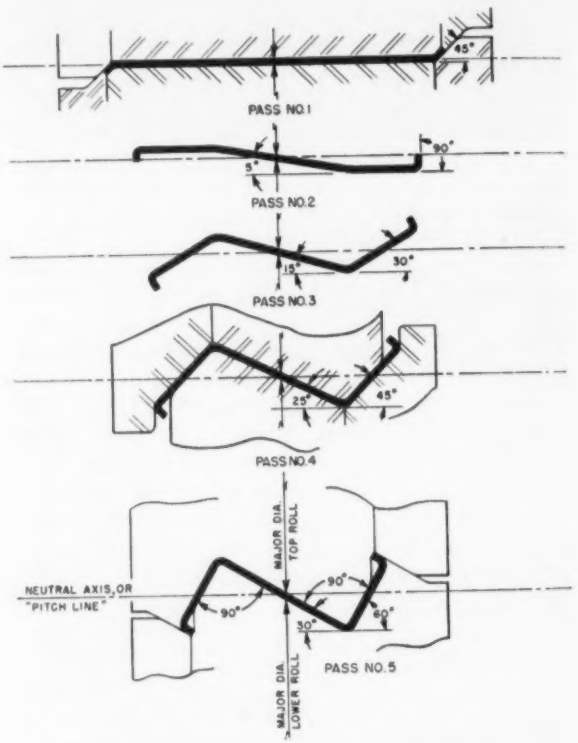

FIG. 8—Multiple bends on complicated shapes such as this Z section must be calculated individually to determine the number of passes required.

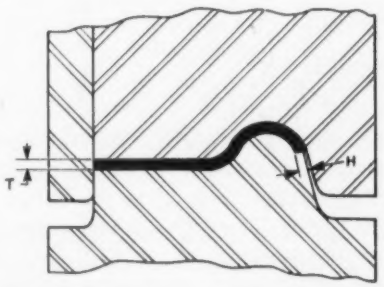

FIG. 9—The height, *H*, of shoulder stops should be about 0.015 in. less than the metal thickness, *T*.

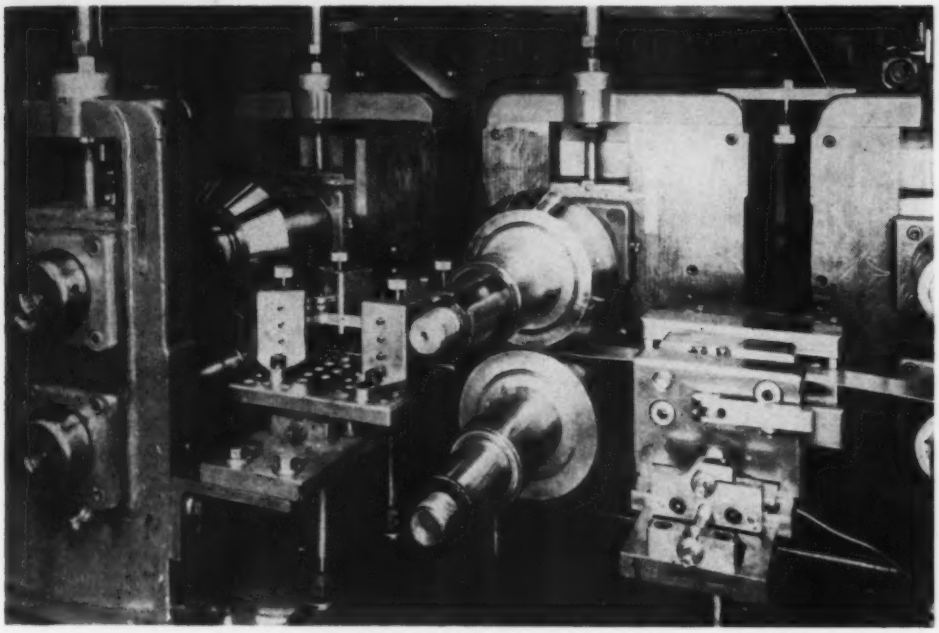

FIG. 10—Guides are sometimes required between roll passes to keep the strip stock properly aligned.

faces, and finally grind the forming surfaces. Solid rolls are mounted on expanding-type arbors, while split rolls are held on a threaded arbor. Split rolls are ground together as if they were solid. Before removing the ground rolls from the arbor, they are inspected on a surface plate. Finished rolls are then tried out.

Theoretically, if the rolls are designed properly and built accurately, using shoulder stops, there should be no necessity for guides or other corrective devices between passes. There are occasions, however, where the spindles of the roll forming machine are too far apart to permit the material to thread itself from one pass to the next. Such occasions include cases where the material has camber or properties of a variable nature that affect the forming or where shoulder stops are not used. In such cases, plastic, fiber, or Kirksite guides may be used. Invariably, an adjustable infeed guide must be used to start the strip, and an adjustable roller guide must be placed between the first and second passes to keep the strip straight.

These guides serve another purpose in that they provide a means of shifting the strip from one side of the machine to the other to permit widening or narrowing the flanges or edge margins of the part without changing the positions of the rolls on the shafts where no shoulder stops are used. Typical guides can be seen between roll passes on the cold roll-forming machine shown in fig. 10.

Springback is encountered to a varying degree, depending upon the section, the properties of the metal and the method of forming. In general, it is overcome by overforming, accomplished in the next to the last pass. The contour of the second to last pass is developed after roll forming a part without it. Although the main purpose of guides and idler rolls is to guide the material into the forming rolls, they may also be used to compensate for springback. To a large extent, the method of forming the radius affects the degree of springback. The method in which the bend radius is decreased progressively as described seems to produce the least springback.

Cold roll-forming machines are equipped with a bending stand at the outfeed end, on which various yokes or shoes can be fastened. These either provide deliberate coiling of the finished section or a means of correcting a tendency of the shape to bend or twist as it leaves the rolls. It is often easier and more economical to correct these tendencies through the use of such yokes and shoes than to dismount and correct the rolls by grinding. If such yokes are used, they should be designed so as to pivot in all directions about the pass line. This is important since pivoting a corrective yoke about any other point will encourage a tendency toward waviness in the finished section. If deliberate coiling is desired, it is best to provide adjustable coiling rolls designed either as idlers or as driven rolls as shown in fig. 11.

Where the section being produced is finished straight, pieces may be cutoff without stopping the forming machine. A mechanical device using a Microswitch or an electric eye can be mounted on the runoff table to activate a flying cutoff trip mechanism for any desired length. The cutoff die is mounted freely on slides to compensate for possible variations in running speeds and is returned to its starting position by springs after each cut.

Cold roll-formed sections, to serve their final purposes, must generally be drilled, punched, slotted or have other operations performed on them before they become an integral part of any

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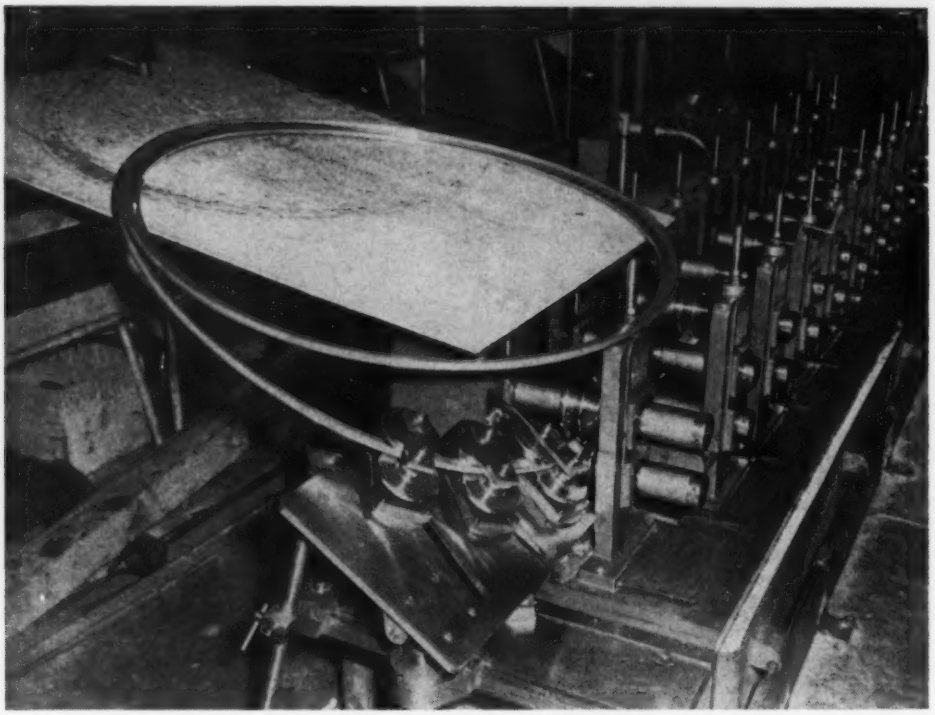

FIG. 11—Adjustable coiling rolls, of either the idling or driven type, can be employed to coil the cold roll-formed strip.

structure. A novel, economical and comparatively new addition to cold roll-forming is the addition of piercing, slotting, or trimming operations to that of roll forming. Generally, the piercing or slotting punches are mounted on a flat male roll, and the dies in a flat female roll, located ahead of the first forming pass. The slugs drop through holes, down and out the side of the female die roll. The position of such holes in the strip are governed by the diameters of the die rolls, and may be placed in almost any order desired.

Stenciling of identification numbers and letters can be accomplished either through the use of inking rollers or rolls in which the identification marks are engraved. This operation can be applied at the entrance or exit end of the machine. If inking rollers are used at the infeed end of the machine, the ink must be a quick drying type, since the forming operation requires a lubricant that may cause smearing. An air hose attached to a bracket above the stenciling operation will help to dry the ink before forming begins.

A suitable lubricant for cold roll forming is one part soluble oil to five parts of water. On occasions where the finished section is to be painted or where degreasing facilities are not available, a solvent may be used for lubrication and the resulting evaporation will leave a dry piece.

New Books

"Metallic Creep and Creep Resistant Alloys," by A. H. Sully. An analysis of the phenomena affecting creep behavior in metals is made, and specifications for long-term creep tests are given. The chapters dealing with the metallurgical and physical theory of creep and the development of creep-resistant alloys are treated with considerable detail to present theoretical explanations for practical observations. Interscience Publishers, Inc., 215 Fourth Ave., New York 3. $5.50. 292 p.

"British Standards for Steel and Steel Products," B.S. Handbook No. 10. A handbook presenting a comprehensive picture of the British steel industry, it contains articles describing the manufacture of steel and steel products, and gives classified summaries of the essential technical requirements of British standards for steel and steel products as well as other information of general interest. British Standards Institution, 24/28 Victoria St., London S.W.1, England. Price 25s. 674 p.

Finishing Automotive Die Cast Parts

Summary:
High production rates for finishing die cast automotive parts are maintained through the use of tumbling and blasting equipment to remove flash and burrs, while a conveyerized automatic unit is utilized for dichromating parts to inhibit corrosion.

by **HERBERT CHASE**
New York

ONE of the latest setups for rapid mass production and finishing of zinc alloy die castings is in operation at Rochester Products Div., General Motors Corp.

Die castings contain some flash and, even when removal by machining is done, fine burrs or whiskers often remain and must be eliminated. On some parts a sufficient amount of flash can be removed by suitable tumbling procedures. One of the Globe tumbling barrels used for flash removal is shown in fig. 1. This is a wood lined, 18 x 42 in., two compartment unit and, for the parts shown, self tumbling with no water or compound, effects the required amount of flash removal in 15 to 20 min.

In such cases, the compartments are nearly filled with parts so as to limit the amount of motion required. Tumbling speed is only 15 rpm. Tumbling of this kind is not adapted to all die castings. Much depends upon the location of the flash, the degree of removal required and the appearance factors involved. In other cases, open inclined barrels secure the desired results.

Parts such as lock cylinders, which include many small cored holes from which flash has to be trimmed mechanically, have remaining burrs, sharp edges and minor particles of thin flash that must be removed. Such work is done by blasting with steel grit fine enough to reach into small cored or machined recesses.

Wheelabrators, such as that shown in fig. 2, serve well for such blasting of lock cylinders, partly because the tumbling action constantly moves the parts so that all surfaces are exposed to the blast. For lock cylinders, SAE G80 steel grit is used. The rubber covered tumbling unit is about half filled and the time in the machine is about 15 min. Before blasting, however, the parts are put through a three phase degreasing, as they must be free of oil or grease to insure proper blasting as well as to prevent any grit adhering to surfaces. Blasted pieces are noticeably smoother than before but are darkened by the blasting action. This is not significant because the parts, if exposed to view in service, undergo plating subsequently.

In the case of castings for carburetors, fuel pumps and radio antenna holders, which are likely to stand in contact with condensed moisture and may then collect white zinc oxide, an inhibiting treatment of the chromating type is applied. This is done in a Udylite automatic machine in which the parts are racked by hand, because they must be held in such a position that the solutions drain out properly.

Racks are of stainless steel and require no coating. They are equipped with prongs or

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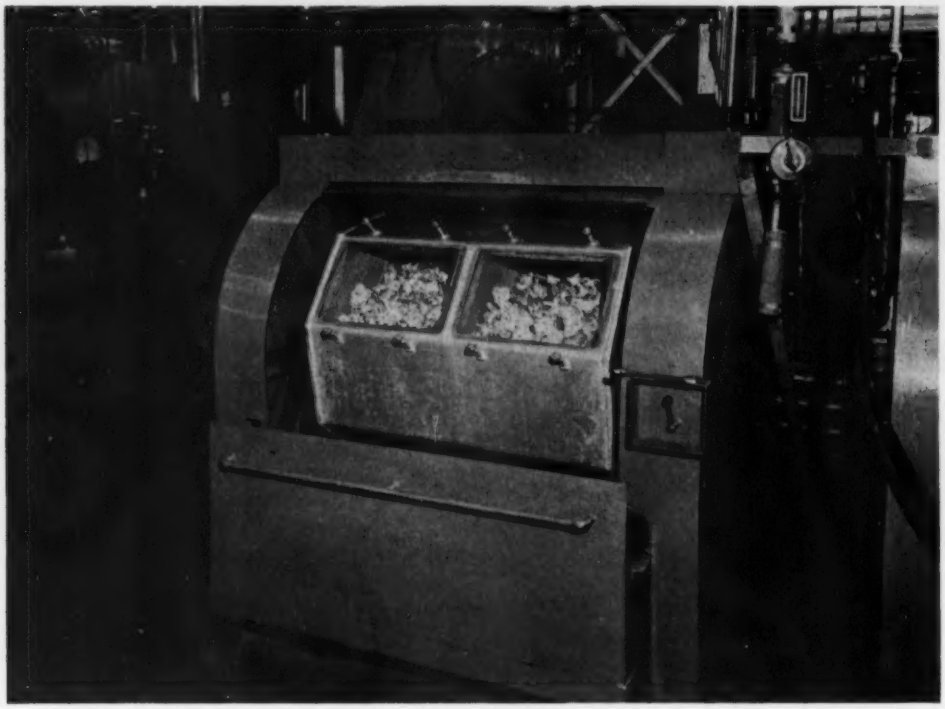

FIG. 1—Wood lined tumbling barrel used in self-tumbling to remove flash on some types of small zinc die cast automotive parts. Compartments are filled nearly to top to limit motion of parts in the barrel.

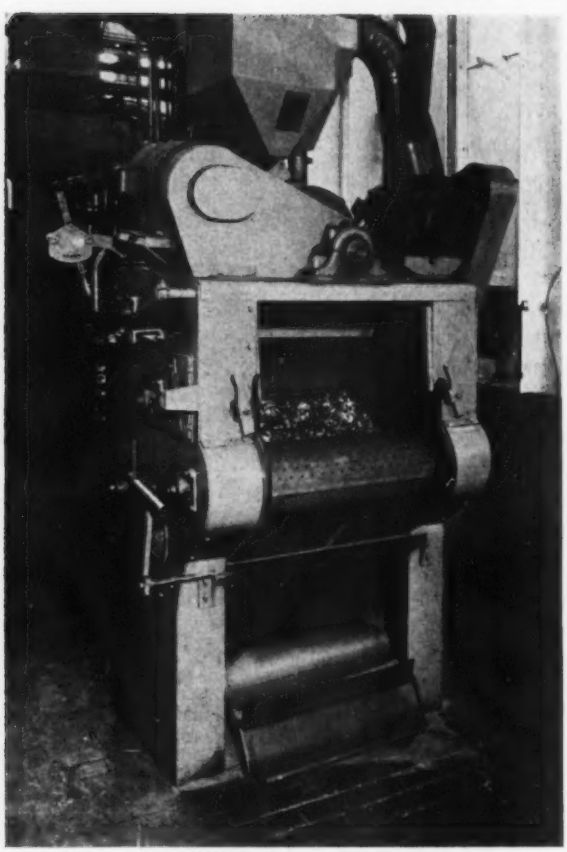

FIG. 2—A charge of parts about to undergo blasting with steel grit in the rubber lined container of a Wheelabrator, to remove burrs and sharp edges.

hooks on which the parts are hung. As no electrolytic action is required, spring or positive contacts with the rack are not necessary. Loading is done at the station, fig. 3, when the carrier hooks are lowered to convenient height. The machine has its own chain conveyer which is raised, lowered and advanced in a scheduled time cycle to insure proper dwell in each successive tank.

After loading, racks first enter a clearing and etching solution containing 30 lb of K7 Pennsalt to 140 gal of water. This solution is held at 180° to 200°F. and parts remain in it for 17 sec. This dip is repeated in a second tank but in this case the alkaline used is Clepo 2GE in the same concentration, the bath being at the same temperature.

Before chromating, the parts are given a dip rinse in cold running water. This is followed by the chromating dip in a solution containing 100 lb of sodium dichromate and 4 pt. of sulphuric acid to 140 gal of water. A pH of 1.4 to 1.7 is maintained. The bath is kept at room temperature and is mechanically agitated to insure reaching all recesses in the castings. Time in this bath is 17 sec., as in other baths.

Chromating is followed by two rinses in cold running water and then draining and by blowing off the jets of compressed air. Then the racks traverse a drying chamber in which blowers circulate air over steam coils. Temperature in this chamber is 175°F but the time is such that castings do not attain a temperature above 140°F. If this temperature is ex-

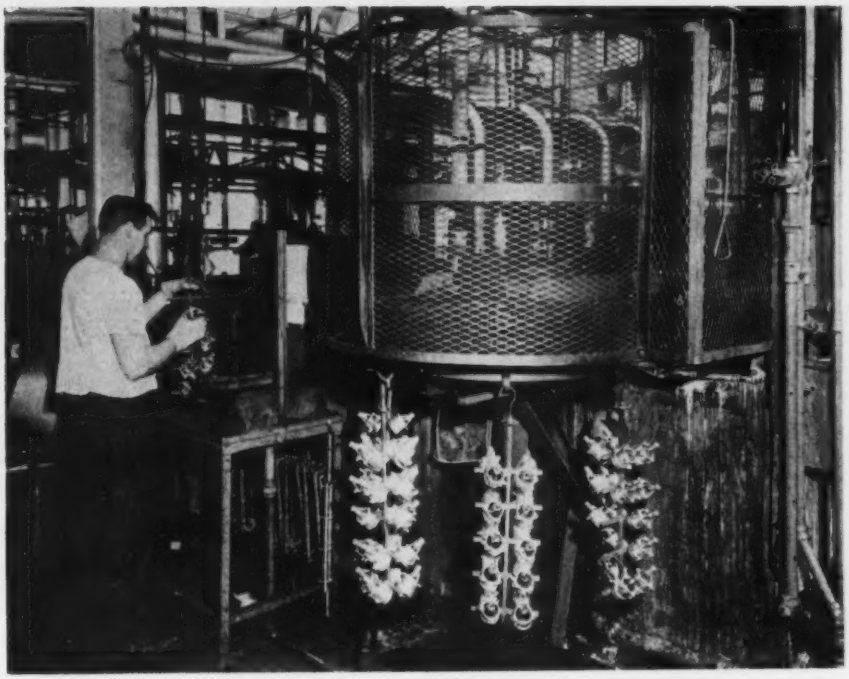

FIG. 3—Racking the die cast parts prior to hanging the racks on the conveyer that carries them through the Udylite plating machine, at right, used for applying corrosion inhibiting chromate treatment.

ceeded, bleaching of the coating occurs and it loses its water of crystallization. Fig. 4 shows the end of the Udylite machine opposite to that at which loading is done.

The coating resulting from this treatment gives the castings a somewhat brassy or straw like color over which paint may be applied. However, carburetor, fuel pump and most other castings require no further surface treatment and hold the coating indefinitely without sign of surface corrosion. There is no adverse effect upon steel inserts applied before coating. They too are coated and appear about the same color as the casting.

Dimensions are not seriously changed by the coating. It can be applied to threads without noticeably affecting fits. Although machining can be done after the chromating treatment, the latter is usually completed after machining because the treatment affects only the surface and is removed where machining is done. Surfaces machined after chromating lack the corrosion inhibiting effect that the treatment affords.

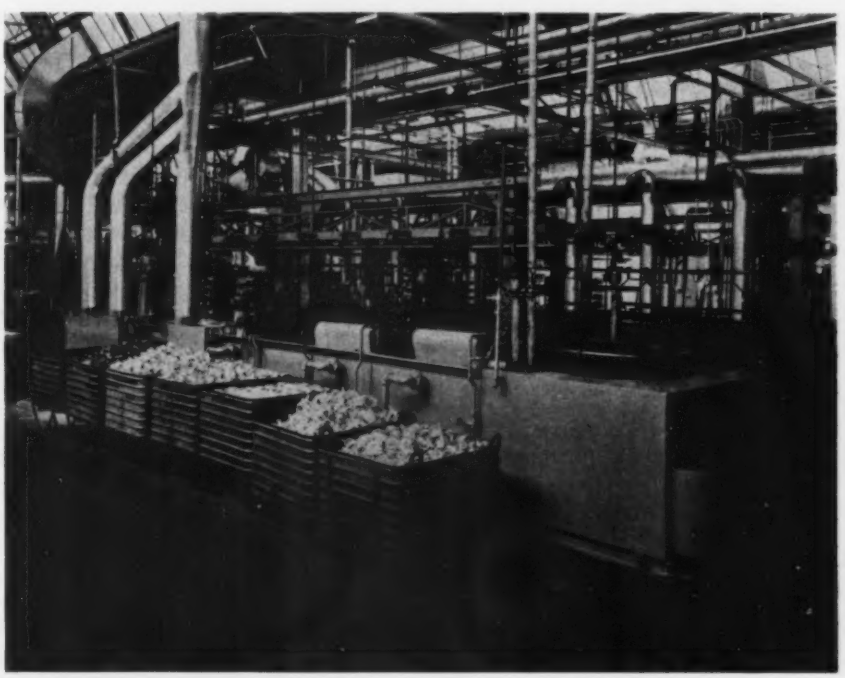

FIG. 4—The other end of the same conveyer fed Udylite machine employed in the series of dipping and drying operations required in chromate treatment.

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Pickling

By Clarence B. Mitchell
Consulting Engineer,
Detroit

FIG. 1—Hastelloy pickling assembly used in agitated sulfuric acid at 160° to 180° F and a concentration of 8 to 12 pct by weight.

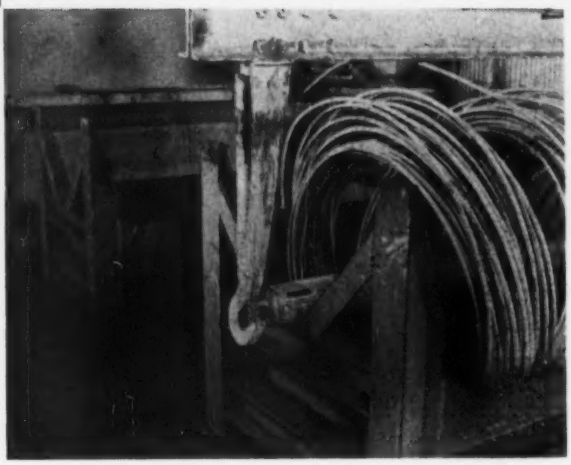

FIG. 2—Hastelloy B clad yoke bar, alloy B hook, and the I-section of alloy C. Note the mark at liquid level.

CONSTRUCTION of pickling equipment in which steam or submerged gas burners are used to heat and agitate the pickling acids presents an unusual corrosion problem. Agitation causes high acid velocities on equipment and also a great deal of aeration and oxidation. These factors greatly increase attack rates.

Kay Industries, Detroit, recently fabricated six hook and bar pickling assemblies for Pilgrim Drawn Steel Div., Automotive Materials Corp., Plymouth, Mich., with the expectation of the assemblies lasting for more than 10 years under severe operating conditions. They are being used in sulphuric acid at a concentration of 8 to 12 pct by weight and at temperatures of 160° to 180°F. During pickling, the acid is heated and agitated by a submerged lead alloy combustion burner.

The hook and bar assemblies were constructed of five different alloys in order to make the best possible combination of corrosion resistance, strength, ease of fabrication and economy. Hastelloy alloys B and C, and type 347 stainless steel were used for the construction of the hooks, and the bars were made of Hastelloy alloy B and SAE 4340 and 1035 steels. Parts were assembled by welding.

A selection of materials for the pickling rack could not be made accurately on the basis of published laboratory corrosion data, but a survey of published sources did indicate a number of materials that are resistant to 10 pct sulphuric acid at 180°F with corrosion rates of 0.005 to 0.020 in. per year. These were Hastelloy B and C, a copper-nickel alloy, lead, aluminum-bronze and several other commercial materials. Past experience with pickling equipment eliminated all but the first three of these materials because of lack of necessary strength. The copper-nickel alloy was also eliminated because of the high acid velocity and the oxidizing conditions caused at the liquid level by the submerged gas burner. The only material that possessed all the requirements for the severe oxidizing service at the

Equipment for Severe Corrosive Conditions

FIG. 3—Hastelloy B clad yoke bar and trunnion before assembly.

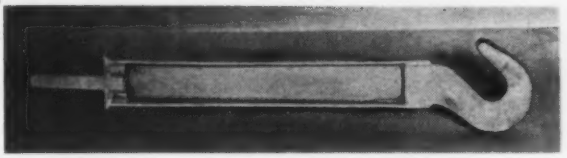

FIG. 4—Hastelloy C I-section joined to alloy B hook with alloy C welding rod.

SUMMARY: Use of an unusual combination of five different alloys in the fabrication of hook and bar pickling assemblies yields maximum strength and corrosion resistance at minimum cost.

liquid level was Hastelloy C.

For reasons of economy, it was decided to use Hastelloy B to handle the subsurface corrosion and alloy C only on the main hook support to sustain the more severe corrosion at the liquid surface. It was further decided to construct the entire asssembly from standard mill size wrought products by simple forming and welding operations.

The yoke bar was made of SAE 4340 steel tube clad with Hastelloy B tubing. The end trunnions were made from Hastelloy B hot-rolled bar stock, machined for welding into an SAE 1035 steel bushing. This bushing was, in turn, fitted into the SAE 4340 steel tube. Then the trunnions were welded in places that would not be subjected to maximum corrosion, with stainless steel welding rod. By using Hastelloy B washers and welds, the assembly was made in such a way that the whole bar had an alloy B surface. Except for two small surface welds that could be readily inspected and maintained, the entire assembly was heat treated at 2150°F for 20 min to maintain maximum corrosion resistance after welding.

The yoke hooks were machined from 1¼-in. Hastelloy B plate. These hooks were slotted and joined to I-sections of Hastelloy C by welding with alloy C rod. In this way, alloy C was used only where maximum corrosion resistance was necessary, at the liquid surface. The 1-in. thick attaching lug at the top of the I-beam of Hastelloy C was made of type 347 stainless steel, since this part comes into contact with pickling fumes only.

After a year of continuous operation, the hook and bar assemblies show a corrosion loss of only 0.002 to 0.007 in. at various points. Only the very small, unannealed weld areas at the ends of the bar will require maintenance during the second year of operation. On the basis of the first year's experience, a service life of more than 10 years is expected.

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Handling Emery Dust

In Saw Glazing

By CLYDE S. CASSELS
Plant Engineer,
Henry Disston & Sons, Inc.
Philadelphia

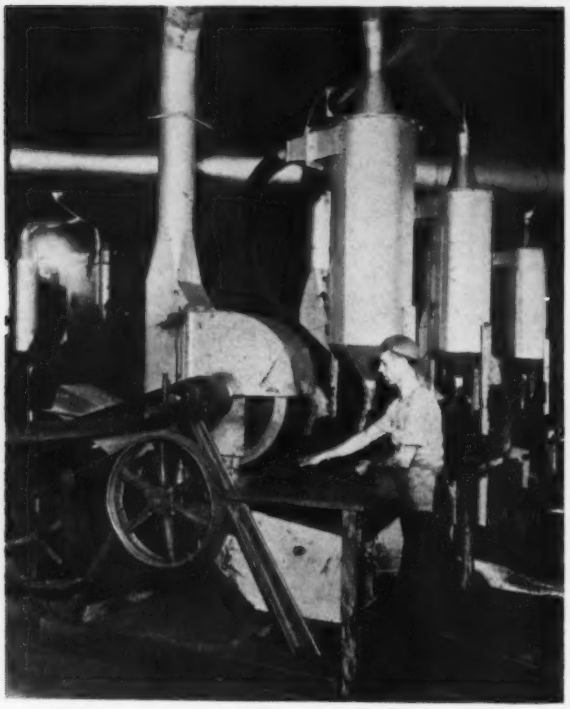

FIG. 1 — Installation of pneumatic dust collector system for saw glazing operation at plant of Henry Disston & Sons, Inc.

THE utility of a high grade hand saw lies in the careful selection, fabrication and heat treatment of the steel blade, and equal attention to the construction of the handle, which permits a long period of severe service. Craftsmen also require that their tools have a fine finish and retain their good appearance during service.

A properly designed hand saw is not of uniform thickness throughout. Its gage is constant along the tooth edge but the remainder of the blade tapers from the tooth edge to the back and from the point to the handle end. Such design gives proper clearance in the cut and good balance to the tool. This blade shape is produced by grinding. While the ground surface is smooth and uniform, it does not have the finish or polish desired. The final polish, or glaze, enhances the appearance of the blade and improves it functionally. The smooth polished surface reduces friction in the cut, makes the blade easier to clean and improves its rust-resistance.

In the Philadelphia plant of Henry Disston & Sons, Inc., this glazing operation is performed by dusting the saw with loose emery grit or flour and passing it under pressure under a specially designed polishing wheel. The quality of the polish desired is obtained by varying the number of passes under the wheel and the grain size of the emery used. Saw makers are very critical of this phase of blade manufacture and expend considerable effort to obtain the desired finish quality.

The use of loose, dry emery creates a dust condition, and a storage and handling problem, both of which are detrimental to the efficiency of men and machines. Dust removal at the Disston plant was handled by means of a standard wheel hood and pipe system through an exhaust fan to a dust room. Emery was handled manually. The lower part of the glazing machine was not enclosed.

When it became necessary to replace the old dust collection system due to expanded activity and normal wear, it was decided the new system to be installed must provide for: (1) Removal of dust from the glazing operation; (2) removal of dust caused by the handling of spent abrasive; (3) elimination of manual return of spent abrasive to the point of re-use, and (4) separation of fines from re-usable grit.

The accompanying photographs of the completed installation (see figs. 1 and 2) show the results as developed by the contractor, American

Wheelabrator & Equipment Corp. in cooperation with Disston engineers.

To capture all possible dust, the machine was enclosed as much as was consistent with good operating efficiency. This enclosure also confines the spent abrasive and collects it at the bottom of the cabinet, fig. 2, where it is picked up by suction and carried to a small cyclone separator at the machine. The cyclone removes the reusable emery from the air stream but allows undesirable fines to be carried away. The reusable abrasive passes out through a dribble valve in the bottom of the cyclone into a collection chamber and from there directly to the work position on the operator's bench.

The suction duct from each cyclone separator joins the duct from the hood. This in turn connects to the main duct line to one of the four American Dustube dust collectors, fig. 3, located outside the building. Dust laden air from the glazing room is carried into this unit passing, with three reversals of direction, over dust hoppers and up through the dust tubes.

Due to the reduction in the velocity of airstream and the reversals of direction, the larger dust particles are dropped from the airstream over the dust hopper. The fines are carried up into the cloth dust tubes and collect there. Only clean air passes through the tubes. A layer of fine dust gradually collects on the inside of the tubes.

There is a shaking mechanism, motor operated, which is timed to start shaking the pivoted tube supports at an interval after the closing down of the collectors at noon and after working hours. The dust which is shaken out drops into a hopper from which it can be removed by means of a sliding gate at the bottom. Some reusable abrasive can be recovered from the Dustube collectors, although the system has been designed to balance air velocity in such a way as to permit the removal of the dust without carrying off the reusable abrasive. From a practicable

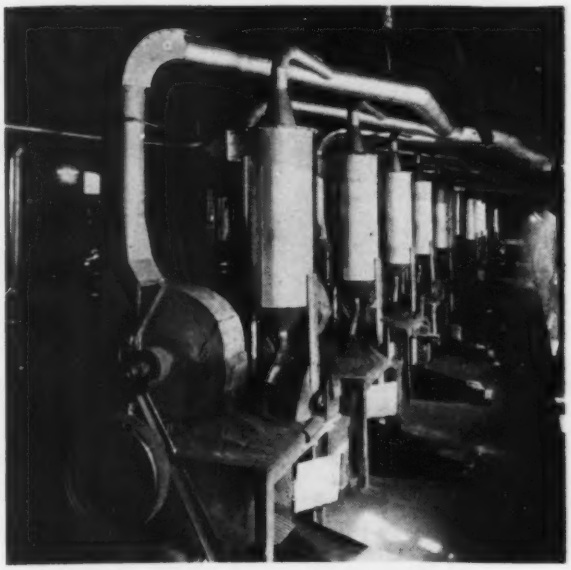

FIG. 2—Used emery from saw glazing operation is picked up from the floor by a pneumatic tube and is carried to a cyclone separator. Reusable abrasive is returned to the bench through the dribble valve, and spent abrasive is carried to collectors outside the plant.

standpoint, however, it has been found the better practice to operate at higher than balancing velocities in order to carry off the maximum dust content, returning the reusable abrasive from the Dustube collector.

The four Dustube collectors each have 536 tubes 8 ft long by 4 to 5 in. diam. There are 15 points of discharge from the collectors. The installation moves air at the rate of 73,360 cfm. Four 40-hp motors are required to drive the collector fans.

During the cold months this volume of cleaned air is returned directly to the glazing rooms, conserving heat and providing circulation. In warm weather, the cleaned air is discharged outside the building, thus improving ventilation and worker comfort.

This system, through the almost complete elimination of dust, has greatly improved working conditions in the glazing rooms while the novel arrangement of abrasive handling has resulted in increased worker efficiency and satisfaction.

FIG. 3—Battery of four American Dustube collectors to which spent abrasive is carried from the plant. Here the final recovery of reusable emery is made.

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The Direct Reading Of 18-8

SUMMARY: Spectrographic analysis is generally considered unsuitable for contents of elements greater than 5 pct. Development of the multiplier-phototube as a light-measuring device makes possible improvements in precision and speed of analysis and removes the contents limitation. Successful application of the improved technique to analysis of 18-8 stainless is described.

THE latest findings of Applied Research Laboratories, described in this article seem to open up a new era in complex alloy production based on instrumental composition control rather than on chemical analysis. Whether these conclusions are justified can best be determined by a study of recent work completed in the analysis of 18-8 stainless steel by direct reading methods.

Spectrographic analysis was used with much success during the war in the quantitative determination of the lower percentage elements. It is generally felt that spectrographic analysis equals or surpasses chemical analysis for all percentages under five, but is not satisfactory for percentages over five. If this is true, then the spectrographic method is not suitable for complex alloy analysis in which the percentages of individual components, other than the major constituents, may amount to 20 or 30 pct of the total.

The basic reason for this is the deviation in analysis introduced by the photographic emulsion used to record the spectra in all spectographic methods. Variations in the uniformity of emulsion produce about a 1 pct standard deviation in the accuracy of results obtained. This means 1 pct of the percentage being determined; that is, a 20 pct determination would have an average error of 0.2 pct. Since spectrographic results generally follow the usual error functions, an error double this amount, or 0.4 pct in the example cited, might be expected to occur once every 20 times. This degree of accuracy may be sufficient for certain high alloy constituent work, but it certainly is not adequate where a high percentage component must be controlled within very close limits. A good example of this in stainless steel work is the specification limit for chromium of from 17.5 to 18.5 pct. A deviation of 0.4 pct would obviously not be allowable under these conditions.

Photographic emulsion not only acts as a barrier to obtaining the highest precision, but it also retards the speed of analysis. Development of a photographic emulsion requires from 5 to 6 min under the most favorable conditions of processing. Considered with the other steps required for a single sample run, this makes the fastest spectrographic analysis consume at least 9 or 10 min.

The advent of the multiplier-phototube as a light measuring device of comparable sensitivity to the photographic emulsion offered a means for significantly improving both precision and speed of analysis. This has been accomplished in spectrochemical analysis by incorporating multiplier-phototubes in direct-reading instruments such as the Quantometer. As compared with spectrographic methods, these instruments have made possible about a three-fold increase in both the speed and the precision of analysis in the case of high percentage components. The significance

Analysis Stainless Steels

By M. F. HASLER
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of this development in respect to the production of complex alloys is apparent.

The increase of speed and accuracy in spectrochemical analysis has created two problems. The first essential is that good standards be obtainable, since the method is entirely a relative one, and analysis of an unknown sample depends upon an analysis of a known sample. Fairly large quantities of standard materials should be available, since it is desirable to standardize at rather frequent intervals and materials are gradually used up by the necessary grinding and finishing as well as by the spark discharge utilized to evaporate the standard.

The second problem has to do with a rapid method of calculating results in the case of a large number of high percentage components. It is true that in the measurement of minor constituents in systems such as low alloy steel, instruments employing photomultipliers can be made direct reading and are termed as such. Nevertheless, the analysis is slightly more complicated in the case of complex alloys since the various constituents are, in practice, compared with the major constituent. This problem is solved by obtaining what amounts to a first approximation of the analysis directly from the instrument, and then utilizing a simple addition and a slide rule calculation, obtaining corrected values from this first approximation. This can be done very rapidly, with the result that it does not appreciably slow down the analysis. It is possible to complete a single analysis of stainless steel, including the preparation of the sample, in from 2 to 3 min and a duplicate analysis in slightly over 3 min.

The results shown below on 18-8 stainless steel indicate that this method can adequately compete with routine chemical methods in the complete analysis of this material for all metallic constituents. This includes the high percentages for chromium and nickel as well as the lower percentages for manganese, silicon and the various stabilizers such as columbium, molybdenum, titanium and tungsten. Certain impurities such as copper can be easily determined at the same time.

To appreciate just what has been accomplished, it is interesting to consider the specifications for some of the instruments involved. In the case of complex alloys of iron such as stainless steels and tool steels, the spectra obtained are quite complicated; therefore, the analysis requires an instrument of rather large dispersion in order to adequately separate the lines of the spectrum. For this reason the Two Meter Spectrometer has been used in all this work to date. This is shown in fig. 1 as essentially a Two Meter Spectrograph to which has been attached a receiver case containing receiver slits and the multiplier phototubes used to convert the light of the various spectrum lines into electrical currents. The cur-

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rents so generated are used to charge condensers which are mounted in the recording console shown in fig. 1.

Upon completion of the discharge cycle, the charging of the condensers is terminated and the amplifier and strip chart recorder system are connected in turn to the various condensers, one at a time. This allows the charge on each to be recorded under conditions of bias and sensitivity, determined by control knobs on the front of the console. These control knobs have been preset by utilizing two standard samples, one of low and the other of high concentration. A preliminary analysis or "chart analysis" is then recorded directly on specially printed scales reading directly in percentage composition. As indicated above, these are rapidly converted to the final precise analysis.

The spark-like discharge to the sample is provided by the Multisource unit shown in fig. 1. It was found very early in the study of high percentage alloys that the conventional high voltage spark unit, which has been widely employed to date, proved unsatisfactory.

This was due to the fact that variations in the compositions of one element would affect the determination of another element principally because of the high percentage involved. By choosing special conditions on the Multisource which provide a unidirectional pulse of current to the sample, these effects of variable composition of one element influencing the determination of another have been entirely eliminated. This greatly simplifies both the standardization and calculating problems.

In order to set up the scales which provide the direct reading preliminary analysis it has been necessary to develop a graphical method of calculation. This is used only for the basic calibration of the instrument and is not required once the printed scales, on which the chart analysis is read directly, have been developed. The simplicity of the actual calculations is shown in table I.

The results obtained for stainless steel analysis are, as indicated above, quite significant. Average deviations for a single analysis of 0.3 pct of the quantity being measured have been repeatedly obtained for the chromium and nickel analyses of this type of material. This means that the average deviation in an 18 pct chromium analysis will be about 0.06 pct and in an 8 pct nickel analysis about 0.03 pct. Such deviations compare quite well with routine chemical analyses used for the control of these alloys.

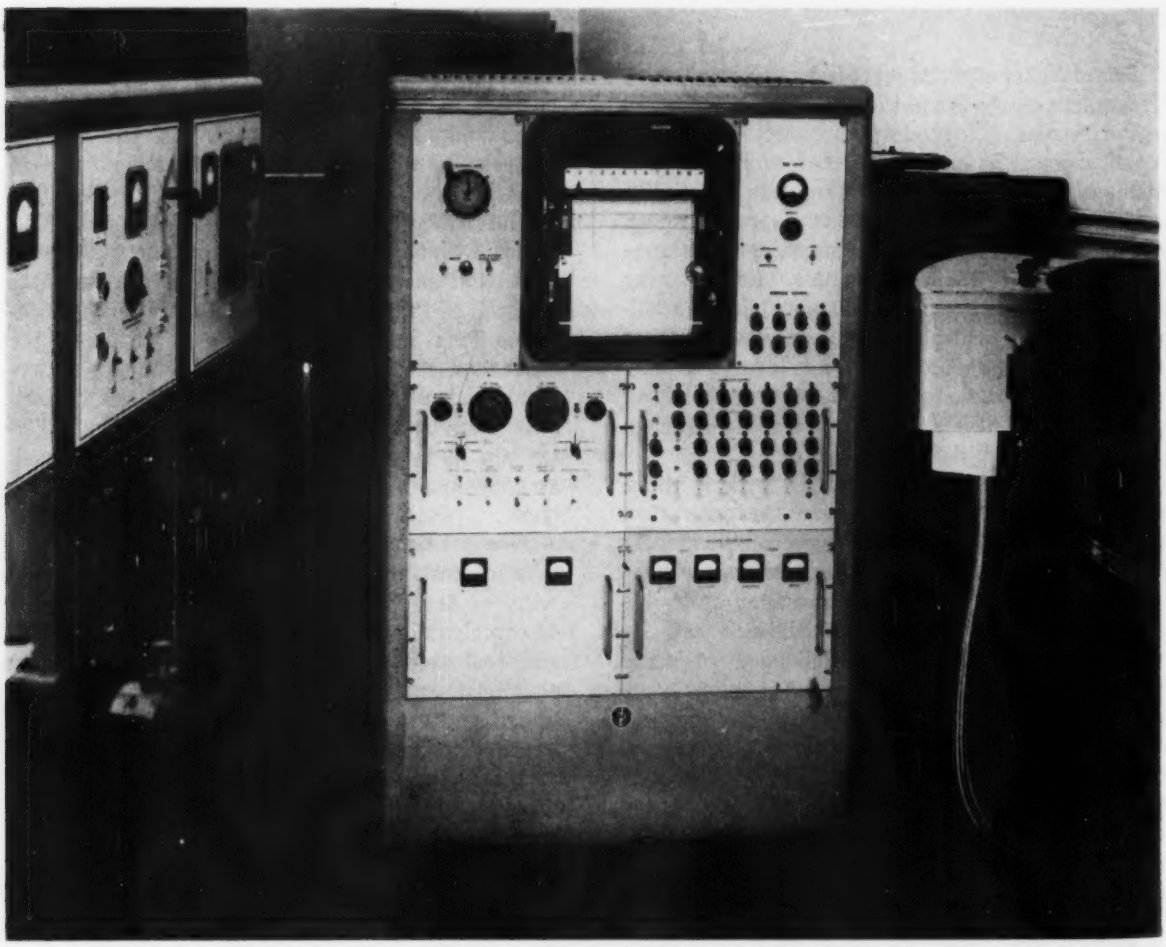


FIG. 1—Multisource unit, recording console, and two meter spectrograph with receiver case containing the multiplier phototubes.

TABLE I

Example of Calculation Method for Conversion of Chart Analysis to Final Analysis.

	Cr, Pct	Ni, Pct	Mn, Pct	Si, Pct	Sum, Pct	Factor
Chart Analysis	17.52	7.58	1.23	0.52	26.85	1.018
Final Analysis	17.82	7.72	1.25	0.53	.....	.....

$$\text{Factor} = \frac{100}{71.5 - \text{sum}}$$

Final Analysis = chart analysis × factor

TABLE II

Comparison of Repeat Analyses Results.

	Sample 301			
	Chromium	Nickel	Manganese	Silicon
Chemical Analysis*	19.34	8.38	0.67	0.52
Spectrochemical				
8:30 a.m.	19.30	8.39	0.68	0.51
9 a.m.	19.39	8.45	0.69	0.52
9:30 a.m.	19.38	8.44	0.68	0.51
10 a.m.	19.38	8.41	0.68	0.52
10:30 a.m.	19.40	8.31	0.67	0.53

* Sample was inserted into production analysis run once every half hour. Instrument recalibrated during production run between each analysis of above sample.

Table II shows repeat analyses obtained over an 8-hr day. These analyses were taken about every half hour as part of a production run of analyses in order to illustrate the general reproducibility and stability of the instrument. It should be pointed out that these analyses are the averages of duplicates and require about 3 min to complete from the time the sample is received. Also indicated previously, manganese, silicon, and the various stabilizers can be determined concurrently with the analysis of chromium and nickel.

In cases where it is necessary to determine very low percentages of residual impurities, a separate type of discharge, also obtainable from the Multisource unit, can be utilized, and these elements can be determined with a separate discharge to the sample. In general, another 40 sec would be required to complete this extra work; however the thoroughness of analyses such as those indicated, obtained by a combination of the two techniques, would be far beyond any control that is usually exercised chemically in these complex alloys.

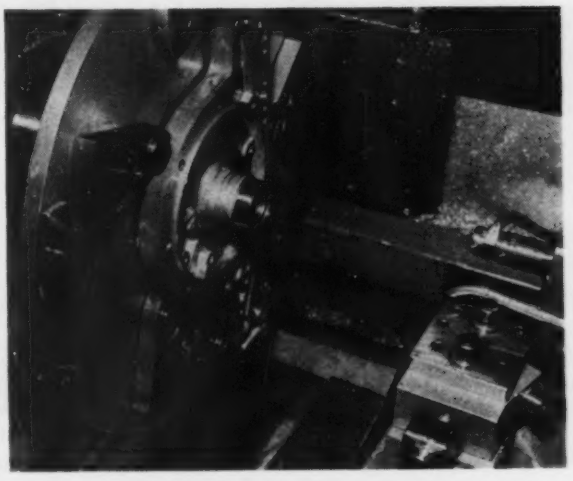
From the above results, it will be apparent that this work represents an advance in the field of analysis possible by spectrochemical methods. Ranges of analysis heretofore considered beyond the reach of any means other than chemical analysis are now open by this new method. Generally, results can be obtained by this method at least seven to ten times as rapidly as by chemical methods, and about three times as rapidly as by spectrographic methods.

The net effect of these improvements should result in more economical production of high percentage alloys under controlled conditions, which will allow meeting closer specifications than have been used in the past. Lower costs and improved quality resulting from better analytical control will permit the use of these alloys in many new applications.

Centrifugally Actuated Fixture Eliminates Chatter

BUICK Dynaflow transmissions include a large aluminum diecasting called a reaction flange that must be faced in a cut so true that variations from flatness in excess of 0.0005 in. result in rejection. Machining at the Buick Div., General Motors Corp., plant in Flint, Mich., is done in a Heald Bore-matic with the flange fastened to a faceplate to which the work is clamped only at the hub while the facing cut is made and a lip diameter is turned.

Some difficulty was experienced initially because of chatter, but this has been overcome by the use of several weights pivoted to the face plate on shoulder screws, as shown in the accompanying illustration. These weights are so arranged that, as the face plate and work are rotated, the heavy ends of the weights move outward as a result of centrifugal force. This causes the short arm of each weight to press against the edge of the casting, which is thus held securely and free of chatter while the carbide tools make the exceedingly smooth cuts required.



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Units Speed Strip Steel Handling

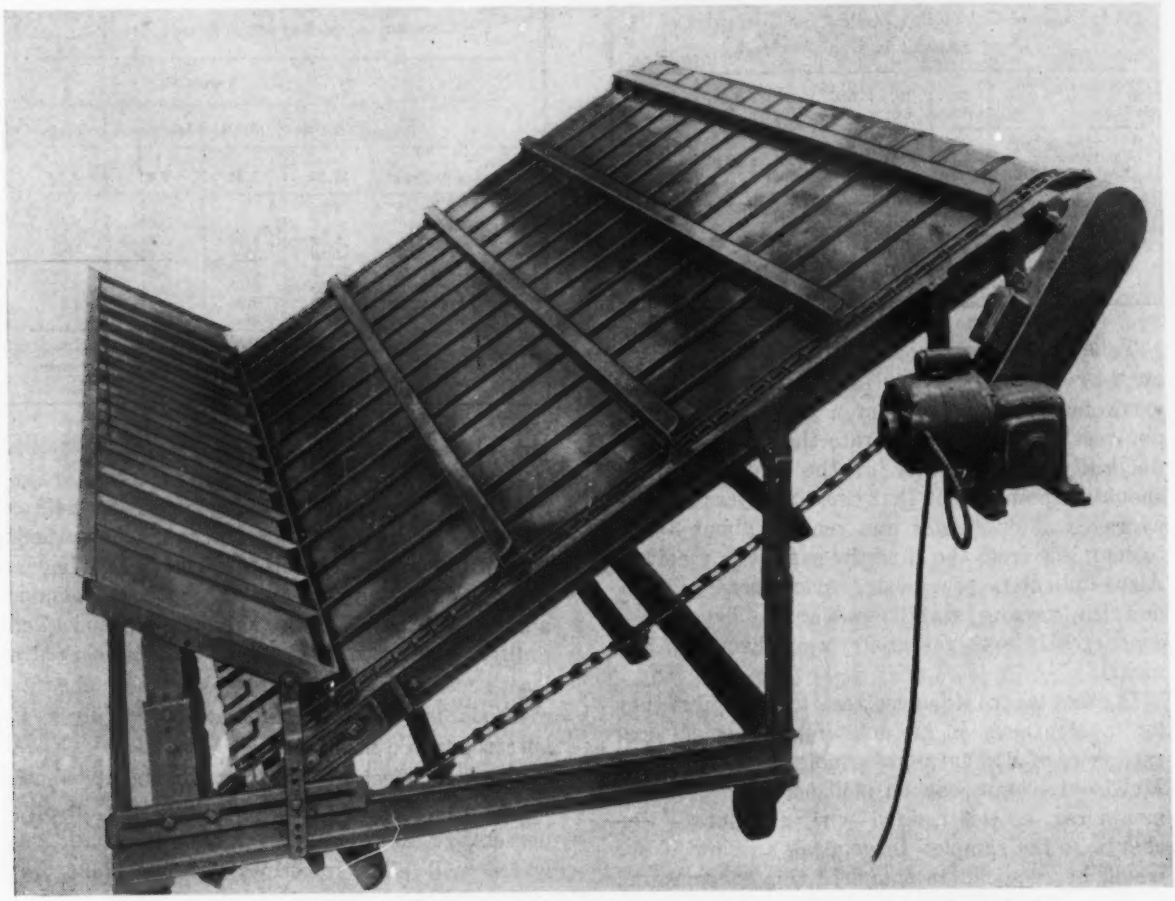


FIG. 1—Handling of sheared strip stock from a press to a loading truck or skid is simplified by this portable unit. Called the Stripveyor, this unit will handle strip up to 3/16 in.

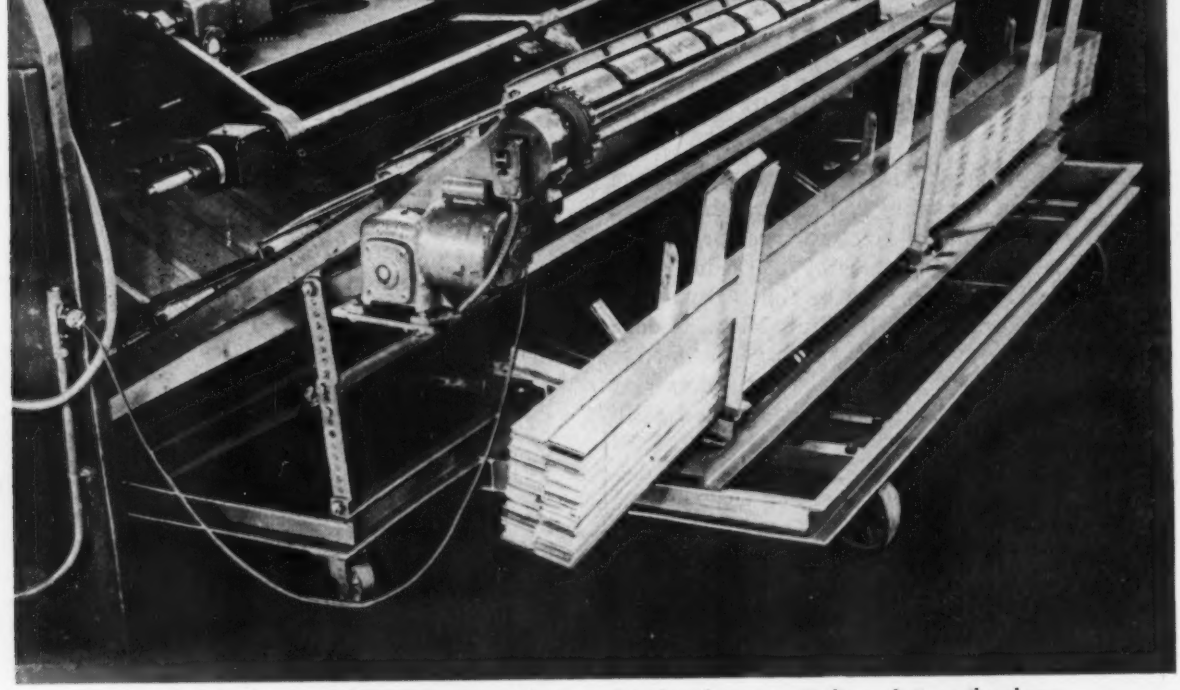
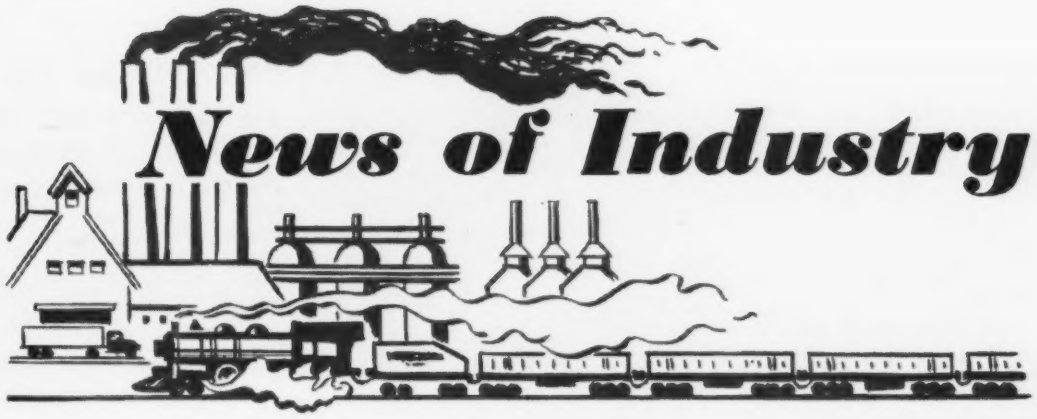


FIG. 2—Stacking of strip as narrow as 1¼ in. and in lengths up to 10 ft, as fast as the shear will cut, is possible with the Strip-Stacker shown here. As one stack is completed, it is moved back to make room for a second stack.



STRIKE FRONT BROKEN

P. 116

Domestic Iron Powder Industry Threatened

Low cost competition from Sweden seen aided by lower tariff and devaluation of currency. . . . Two U. S. producers have withdrawn from market— *By JOHN ANTHONY.*

New York—Serious threat to the continued existence of domestic sources of iron powder is seen in low cost competition from Sweden. This is aggravated by recent reductions in the tariff. Also it is conceivable that imported powders could be priced lower as a result of devaluation of Swedish currency.

In the event of another war, imports from Sweden might well be cut off, leaving the U. S. with inadequate plant facilities. The seriousness of this situation is highlighted by the shutdown recently by Buel Metals Co., Painesville, Ohio. Not quite two years ago Metals Disintegrating Co., Elizabeth, N. J., withdrew from the market. Both of these developments were the outgrowth of low priced Swedish competition.

Captured Half the Market

The low cost iron producer in Sweden has already captured nearly half the total domestic market. Sweden is currently shipping about 2700 net tons of iron powder a year into this country. Production by the domestic industry is about 2900 tons a year.

The iron powder market in the U. S. can be divided into two basic types of application. Domestic producers are selling about 1500 tons a year for compacting small parts, impregnated bearings and friction uses. About 1000 tons a year is being sold for magnetic cores and other electronic uses. Something over 100 tons a year is sold for miscellaneous applications not related to either of the above uses.

Undersells Domestic Iron

Swedish iron powder is going principally into the first type of application. It is in competition with the low priced domestic reduced iron powders, in which it undersells the domestic production by anywhere from ½¢ to 6½¢ per lb. Domestic producers believe there would be little of their lower priced reduced iron powder sold, were it not for the need of fabricators to mix domestic iron with the imported powder in order to prevent growing of the compacted part during sintering.

There has been a good deal of agitation by domestic producers for tariff protection. This was originally set at $2.25 per long ton back in the 1930's. The Swedish Trade Agreement of 1935 reduced the duty to $1.25 per long ton. Recently the Annecy Agreement reduced the duty to 62½¢ a ton. This works out to 2¾ mills per lb, an insignificant rate of duty.

The general policy of the Administration under the Reciprocal Trade Act is to oppose any upward revisions in tariff rates. Action so far by the industry has foundered on this principle. There is still some possibility of tariff

Turn to Page 112

K-F Indicates a Short Layoff

Detroit—Kaiser-Frazer has indicated that the present layoff of 5000 workers at Willow Run will not be for long. According to K-F, the shutdown is not due to the steel strike or to any major changes in its recent line of cars.

Meanwhile, more than 3500 engineering, design, clerical, maintenance and other workers are continuing on the job.

Allis-Chalmers Lays Off 2500

Milwaukee—Allis-Chalmers Mfg. Co. on Oct. 20 laid off 2500 of its workers at the West Allis plant because of steel shortages. Employees will be advanced money to pay their mutual aid organization dues and premiums on life insurance policies.

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INACTIVE POWDER PRODUCER: Feeding the reinforced concrete electrolytic tanks with Armco ingot iron sheets when Buel Metals Co., Painesville, Ohio, was producing low-cost electrolytic iron powder. More recently a producer of reduced iron powder, this company recently went out of production because of low-cost foreign competition.

Iron Powder

Continued from Page 111

action, however, since imports of Canadian iron made by Ferrum, Ltd., are coming into the country at a rate of $12.50 per net ton under another classification.

Fear New Treating Technique

The principal fear of domestic producers is that the Swedish producer may introduce a new treatment technique which would make mixing with domestic powder unnecessary, and thus monopolize the entire low priced domestic market. The great density of the Swedish product, which is largely responsible for its growth during sintering, is inherent in the Swedish production process. Their desire for a larger tonnage from the U. S. market would make work along these lines obvious. At least one domestic producer is at present buying Swedish powder and giving it further treatment toward this end.

Domestic producers are handicapped in reducing their cost of production by several important factors. The domestic industry is comprised of three or four major producers, each producing from 3½ to 5 tons a day. There are also several smaller producers whose specialized products are not in competition with Swedish powder. At these relatively low production rates, coupled with U. S. labor rates at approximately 4 times the Swedish rate, it has not been possible so far to make costs competitive.

Steel Firms May Enter Field

Several producers have estimated that if their capacity could be expanded to between 15 and 30 tons a day, their costs could conceivably be brought down sufficiently to meet present Swedish prices. But the Swedes have not taken advantage of the recent 30 pct devaluation of the kroner, which might permit them to reduce their prices by about another cent.

Domestic producers have been concentrating on the higher grade iron powders required for electronic applications. And hovering in the background is the knowledge that when the domestic market expands well beyond its present tonnage, the steel industry may enter the field with a process by which iron powder can be blown from hot iron, a method pioneered by the Germans toward the end of the war.

Requests Defense Work Be Placed in Distressed Areas

Washington—The Defense Dept. recently requested contractors with Army, Navy, and Air Force orders to place their subcontracts with firms in distressed labor areas, whenever feasible.

Under instructions from the White House, the Munitions Board is already following a general policy of awarding prime contracts to firms in such areas "provided the bid from the distressed area is as low as any other bid."

The board also has approved placing of negotiated contracts in distressed areas where this can be done without "disadvantage to the government."

Will Visit European Steel Plants

Weirton, W. Va.—Two Weirton Steel Co. officials expect to learn something from European steelmakers on the use of oxygen to increase production. Julius H. Strassburger, manager of the service and maintenance department, and William F. McGarrity, assistant to the manager of the steel works department, will visit steel plants in Germany, Austria, Belgium, Luxemburg, France, Italy and England.

Because of low-grade European coal and ore, use of oxygen in steelmaking has been more highly developed through necessity. Weirton is building a 400-ton-a-day oxygen plant at its Weirton mill.

Aluminum Used for Sheathing

Pittsburgh—Childers Mfg. Co., Houston, has developed a combination weather-resistant barrier and jacket of aluminum foil for low-cost sheathing of insulated pipe lines in refineries and industrial plants.

Shipped in 4-ft-wide rolls 100 ft long, the new product is cut and applied on the job, eliminating roll-forming and shop work. It consists of 0.0055-in. Alcoa corrugated foil bonded to an insulating barrier.

Strikes Hit Tool and Die Industry Too

Delegates to NTDMA blame falling order volume on strike uncertainty . . . Many new models and new products expected to be delayed until second quarter of 1950.

New York—The steel, coal and aluminum strikes, which have already caused uncounted loss to manufacturing industries, are now being felt keenly by tool and die makers. This was a focal point of concern to tool and die men who came here for the annual meeting of the National Tool & Die Manufacturers Assn. early this week.

They report that uncertainty over the strike situation has caused some manufacturers of metal and plastic products to defer ordering the special tools, dies, jigs, fixtures, molds, gages and special machinery needed to bring out new or redesigned models. Prior to the labor impasse tool and die business had been improving. In August new orders increased 11 pct, shipments 15 pct and backlogs 3 pct compared with July.

New Models To Be Delayed

The somber note of the strike has changed all that. It looks as if orders received in September have reverted to the lower levels of spring and early summer, according to Centre W. Holmberg, vice-president of the association and president of August W. Holmberg & Co., Inc., N. Y. He added that shipments appear to have held about even, but that this has naturally brought some decrease in backlogs.

Mr. Holmberg pointed out that while these downward trends may continue until the strikes are settled, orders for special tooling can't continue low indefinitely if general business is to regain the levels reached in August and September.

Meanwhile, it appears certain that many new products and new models of old products scheduled to make their debut the first of the year will now be delayed until the second quarter of 1950. Their production is impossible without special dies, molds and other tools.

Jack Kleinoder of John Volkert Metal Stamping Co., Queens Village, L. I., reported that television retooling is exceeding that of any other consumer product. He pointed out that component parts which were formerly made in small lots are now being planned for mass production, but changes in design will continue.

The impact of the $15 billion defense program will soon be felt by the tool and die industry, according to A. A. Stauber of the Daco Machine and Tool Co., Brooklyn. Frank K. Wilkstrom of Frank W. Wilkstrom & Sons, Inc., Brooklyn, said that the Air Corps had begun to place orders for experimental small parts, and production can be expected to increase next year.

Lukens Elevates Officers

Coatesville, Pa. — The board of directors of Lukens Steel Co. has elected Robert W. Wolcott chairman of the board. For the past 24 years Mr. Wolcott has been president of the company.

Charles L. Huston

At the same time Charles Lukens Huston, Jr. was elected to succeed Mr. Wolcott as president. The changes, voted last week, became effective at the end of the company's fiscal year on Oct. 30.

Packaging Exhibit Sets Record

Detroit—The fourth annual Industrial Packaging and Materials Handling Exposition held here, Oct. 4-6, established a new record of 4000 registered visitors. The number of exhibitors was also the largest in the history of the society.

Next year's exhibit will be held either in Philadelphia or Cleveland.

AMERICAN IRON AND STEEL INSTITUTE
350 Fifth Avenue, New York 1, N. Y.

Blast Furnace Capacity and Production—Net Tons

September - 1949 (Month)

	Number of companies	Annual blast furnace capacity	Production‡ Pig Iron		Ferro manganese and spiegel		Total		Percent of capacity	
			Current month	Year to date	Current Month	Year to date	Current month	Year to date	Current month	Year to date
DISTRIBUTION BY DISTRICTS:										
Eastern	12	13,353,580	810,677	8,791,797	24,739	244,053	835,416	9,035,850	76.2	90.5
Pittsburgh-Youngstown	17	26,625,920	1,577,358	16,839,736	12,045	178,003	1,589,403	17,017,739	72.7	85.4
Cleveland-Detroit	6	6,984,600	447,266	4,555,792	-	-	447,266	4,555,792	78.0	87.2
Chicago	7	15,655,390	966,138	9,709,597	1,940	25,475	968,078	9,735,072	75.3	83.1
Southern	9	5,010,060	344,301	3,469,901	4,684	59,175	348,985	3,529,076	84.9	94.2
Western	4	2,912,300	162,007	1,769,545	-	-	162,007	1,769,545	67.8	81.2
TOTAL	37	70,541,850	4,307,747	45,136,368	43,408	506,706	4,351,155	45,643,074	75.1	86.5

‡ September figures preliminary and are subject to revision.

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INDUSTRIAL SHORTS

ARMCO EXPANDING—Ground was broken recently for the construction of a new $12 million openhearth plant at ARMCO STEEL CORP'S East Works plant at Middletown, Ohio. The plant will consist of three 225-ton openhearth furnaces capable of producing 400,000 tons of steel ingots annually.

TAKES OVER—Announcement has been made of the acquisition of the controlling interest of the Ottumwa Iron Works, Ottumwa, Iowa, by the PITTSBURGH GEAR CO., Pittsburgh. New officers for Ottumwa are: Lou Mervis, president; E. R. Phillips, vice-president in charge of sales: and Francis Knuth, vice-president.

CANADIAN BRANCH—Hughes Tool Corp., Houston, has formed a Canadian corporation, HUGHES TOOL SERVICE, LTD., Calgary. Their main warehouse will be in Edmonton and they will sell tool bits through their authorized distributors.

BUYS—Cone-Drive Gears, division of MICHIGAN TOOL CO., Detroit, has purchased the Traverse City, Mich., plant of Parsons Corp. Alterations will be undertaken shortly and it is hoped that operations can begin early next year.

OPENING IN CHICAGO — A regional branch at 815 North La Salle St., Chicago, has been established by the YALE & TOWNE MFG. CO. The new branch will handle the sale, repair, maintenance and spare parts service of hoists, scales and industrial trucks.

EASTERN SALES—A western New York sales division with headquarters in the Cutler Bldg. at Rochester, has been established by TINNERMAN PRODUCTS, INC., Cleveland. Chris Ringhaver, formerly with the Cincinnati office, has been named sales manager.

JET LABORATORY — Pratt & Whitney Aircraft, division of UNITED AIRCRAFT CORP., East Hartford, Conn., has announced that their new $12 million laboratory, designed and built expressly for test of experimental jet engines, named the Andrew Willgoos Turbine Laboratory, is nearing completion. Operations will begin in the early part of 1950.

COST SAVINGS — "Sittin' and Savin'," a color-sound slide film showing how industrial capacitors cut industrial power costs, has been produced by the GENERAL ELECTRIC CO., Schenectady.

MORE ANODES — The Federated Metals Div. of the AMERICAN SMELTING & REFINING CO., New York, has expanded its business in electroplater's anodes through the acquisition of the production facilities of the Metallurgical Products Co., Philadelphia.

NORTHWESTERN REP—Butterfield Div. of Union Twist Drill Co., Derby Line, Vt., manufacturers of industrial cutting tools, has announced the appointment of F. P. ROGERS, Seattle, as their representative in Oregon and Washington.

ACQUISITION — The entire capital stock of A. C. Woods & Co., Rockford, Ill., steel fabricators, has been purchased by the KROPP FORGE CO., Chicago. The transaction involved approximately $500,000. Kropp will take over the immediate operation of the plant as a division of their company.

TOOL DISTRIBUTOR — Firth Sterling Steel & Carbide Corp., McKeesport, Pa., manufacturers of carbide and high speed steel tools, has appointed TOOLS, INC., Ardmore, Pa., as a distributor in eastern Pennsylvania and southern New Jersey.

Eutectic Opens New Plant

New York—Over 400 guests of Eutectic Welding Alloys Corp. attended the formal opening of the company's new plant in Flushing, N. Y., recently.

Highlight of the afternoon was a tour of the plant. Guests were shown the laboratories, foundry, chemical division, EutectoFilm section and the giant high speed extrusion presses of Eutectic's design. At various points along the tour, welding booths were in actual operation to demonstrate the unique surface-alloying properties of 5 of Eutectic's most popular arc and torch rods. Interest centered around the new Eutec-Hand-Omatic, the hand-guided, no-arc-gap electrode for steel which has only recently been made available to the public.

Orders 60,000 Tons of Rails

New York — The Pennsylvania R.R. has placed orders for 60,000 net tons of new steel rail for delivery beginning next May.

All the new rail will be put into main line trackage over the system. It will be of the heaviest sections, weighing 155 lb, 140 lb and 133 lb per yd.

Edward R. Stettinius Dies

Greenwich, Conn.—Edward R. Stettinius, Jr., 49, died here of a heart attack on Oct. 31. Mr. Stettinius was chairman of the board of U. S. Steel Corp. in 1940 when he left to take a defense post in Washington as an aide to President Roosevelt. He became lend-lease administrator in 1941. In November, 1944, he succeeded Cordell Hull as Secretary of State, a post he held until June, 1945.

A. J. Jennings Dies

Cleveland—A. J. Jennings, vice-president, Cleveland Worm & Gear Corp. and Farval Corp., died Oct. 30. He was 54. He had been chairman of the general commercial committee of American Gear Manufacturers Assn. and was one of the founders of the American Society of Lubricating Engineers.

Investors Eye Steel Common Stocks

Some specialists feel steel earnings have their wild gyrations behind them . . . Study of mutual fund holdings shows many are still skeptical—By GEORGE F. SULLIVAN

New York—Though steel has for years been more or less king of the "prince and pauper" industries, some investment people now believe its wildest gyrations are over. At least they feel that its violent ups and downs may not be much, if any, worse than those of many other industries which are fairly well regarded by investors.

Certainly the common stocks of steel companies have not had too lush a reputation in the past. But these investment analysts are convinced that steel management is far different today than it was before the war. On this few will disagree. Steelmakers know a lot more about costs and have more data on markets. They have put a lot of money into improved machinery and research and have taken steps to diversify its products and its customers.

This is the reasoning of the relatively small group of men of finance who believe that steel stocks are good investments. They are far from a majority or common stocks of steel firms probably would not be as undervalued as they are said to be.

Hold Steel In Low Esteem

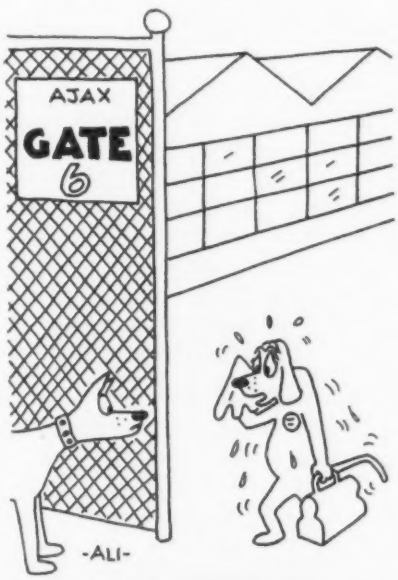
A check of the portfolios of the leading mutual funds shows in what relatively low esteem a large part of the financial community holds steel company common stocks. This is not true of all these large funds. Some of their executives have apparently concluded that these stocks are a good buy.

Perhaps the largest of these funds is Massachusetts Investors Trust, with total assets of about $200 million, of which approximately $195 million are in common stocks. This fund has a little over $2 million in the common stock of Bethlehem and Youngstown Sheet & Tube, or 1.1 pct of its total investments. The total steel common holdings of Adams Express Co., a mutual fund, amount to $142,000 of Youngstown Sheet & Tube, out of a total common stock holding of over $31 million. The figures used here are the latest available reports, generally as of Dec. 31, 1948.

One of the Keystone Custodian Funds with common stocks totaling over $25 million has no steel shares; another has about $1.6 million of Bethlehem and National Steel out of a total of $20 million in common stocks in the fund. The Lehman Corp., an investment trust with over $65 million in common stocks, does not have a nickel in steels.

Some Exceptions Noted

The $58 million State Street Investment Trust, considered by many to be very well managed, does not have a dollar in steels. Another with a zero in "steels" is the Eaton & Howard Balanced Fund, which has more than $20 million invested in common stocks. The Wellington Fund, a well known mutual fund, has 0.2 pct of its assets in steel. Out of some $34 million in common stocks it lists "steels" at $139,750. The $62 million Tri-Continental Corp. has 1.1 pct of its money in steel.



"Whew! I've been working like a man today!"

There are a few exceptions. Scudder, Stevens & Clark, a $23 million fund well regarded in financial circles, has 3.5 pct of its funds invested in the common stocks of Youngstown Sheet & Tube, U. S. Steel and National Steel. Of the $60,772,357 investments in Dividend Shares, Inc., of which $57,600,000 is in common stocks, there are about $4,307,000 in steel company common stocks, or 6.8 pct of its total funds. Its stocks are Bethlehem, Inland, National Steel, Republic, U. S. Steel and Youngstown Sheet & Tube.

One other fund stands out for its steel common holdings. Fundamental Investors, Inc., has 6.1 pct of its total investment in steel company common stocks. Out of some $29 million in common shares it has almost $2 million invested in Bethlehem, National, Sharon, Wheeling and Youngstown Sheet & Tube.

Will Assist Small Business By Spreading Buying Information

Washington—As the first of several plans under consideration to assist small business, the Economic Cooperation Administration is arranging with the Commerce Dept. to help spread buying information.

Under this move, small firms that want to get in on ECA export business will shortly be able to phone, write or call in person at the nearest of the Commerce's 42 field offices, according to the ECA Office of Small Business.

They will be told what goods are currently needed and just who is buying what. This service is to include names and addresses of firms abroad which are importing specific products under ECA authorizations.

This service will also include explanation of ECA pricing provisions, directions for documentation and for marking shipments.

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Bethlehem Steel Signs With Steelworkers

Union wins on non-contributory pensions but loses on non-contributory social insurance . . . Agreement is expected to set a pattern for larger steel companies.

Cleveland—Culminating secret meetings between Bethlehem Steel officials and United Steelworkers officers which began on Sunday, Oct. 23 in New York, a strike-settling agreement was signed here late Monday, Oct. 31.

Operations in all Bethlehem plants were being resumed as quickly as possible. The union won its demand for a non-contributory pension but lost its case for non-contributory social insurance.

The union estimates the pension plan will cost Bethlehem close to 12¢ per hr. Social insurance will cost the company and the employees each 2½¢ per hr.

Details Are Listed

Social insurance benefits are expected to begin Jan. 1, 1950, while pension payments will await negotiations on details. These are expected to be cleared up by Jan. 1, 1950, but not later than Mar. 1, 1950. At that time the new pension system will go into operation.

A **minimum pension** of $100 a month, including social security payments, is provided for employees with 25 or more years of service at age 65. After 15 years' service, and up to 25 years or more, employees will be eligible at 65 for a **minimum pension** of $4 a month for each years' service. An outstanding feature of the contract is that it must be submitted to stockholders for approval. Early reports indicated no difficulty from that quarter, since the plan was said to be an expansion of one in effect at Bethlehem for 26 years, and which paid a minimum of $50 a month to employees with 25 years' service.

Plan May Be Pattern

It was believed that Bethlehem had set a general pattern for the larger steel companies and it was expected early this week that agreements would be reached quickly between other large steel firms and the union. Early opinion indicated that most smaller firms would be unable to stand such a financial burden.

According to some veteran steel leaders, the Bethlehem agreement puts its president, Eugene G. Grace, to the forefront as a champion of social security in the steel industry. Private statements by some steel men showed complete surprise at the size of the company contribution.

The Bethlehem contract runs until Dec. 31, 1951, or 26 months. But the union can reopen the agreement on wage rates only on Dec. 31, 1950. The health insurance and pension program can run until Oct. 31, 1954, but the union reserves the right to terminate both programs Dec. 31, 1951, if the company attempts to make any "undesirable changes" at that time. No elaboration was made by the union on this statement.

Company Can't Cancel

The formula for determining pensions will not be on the basis of total hours worked. It is—total wages paid during the past 10 years divided by 120 months, and 1 pct of this quotient multiplied by the number of years' service. If this amounts to more than the minimum guaranteed pension the employee gets the benefit.

The current pension plan provided for cancellation but the new plan can not be cancelled by the company. The union estimates that the average pension now is $46 a month paid by Bethlehem. The new agreement, the union says, will represent a 70 pct increase, with the new average, plus social security benefits, expected to be approximately $110 a month. But there is no limit to what the employee is entitled to under the formula.

The new plan, like the old one, makes no provision for compulsory retirement. Bethlehem now has 2500 employees past 65 years of age; 733 past 70 years; and 146 past 75.

The social security plan contributed to equally by the company and the employees provides for a minimum $2,100 life insurance policy, an average of $3,000, and a maximum of about $4,500. Paid-up insurance on retirement will range between $1,250 and $1,500.

Sick benefits are $26 a week for 26 weeks. A Blue Cross hospitalization plan is to be set up for the wife and for children (under 19) of the employee, with 70 days' hospitalization provided for.

Problems Facing Industry

New York — The Bethlehem agreement is expected to provide a pattern for settlement between major steel companies and the union. The accompanying reports by Iron Age editors highlight problems which will face steel producers and steel consumers as the industry prepares to go back to work.—Ed.

Settlement Puts Pressure On Steel Operating, Sales Depts.

Chicago—Scrambling for steel is back with a vengeance. The strike settlement now switches all the pressure to the operating and sales departments of the mills. Quotas are back. Conversion is back. Premium price gray markets are again with us and best steel promises on new orders from the mills are well into next year.

Steel sales executives report they are 100 pct on the quota basis for allocation of all major steel items. Alloy, stainless and rails are the general exceptions so far. The quotas are based on the first

9 months' experience with consumers.

Also brought back by the strike is conversion. One mill has booked cold-rolled steel conversion through the first quarter. Hot-rolled conversion tonnages are open for December if the consumer can get ingots, billets or slabs into the converting mills on time. The prices paid by the mills for this semi-finished steel are the same as they were a year ago.

Mills Behind on Deliveries

Thus the steel industry is at present back in the steel shortage groove of a year ago. Demand is strong. The orders received during the strike period, which were accepted by the mills, are now being entered and promises made. Generally, it will take 4 to 6 weeks to clean up the old orders promised for delivery in October. Then the new batch, plus former commitments, will be worked out. Orders entered today cannot be scheduled and won't be promised for a few weeks, as the mills don't yet know how far behind the delivery eightball they are.

On the average the best promises for new tonnages this week are as follows: Hot-rolled sheets, late February; cold-rolled sheets, end of March; plates, early February; bars, end of February; shapes, early February.

Steel Industry Struggles With Tough Production Problems

Pittsburgh—A minimum of 3 weeks, probably more, will pass before the steel industry climbs back to the same operating rate of approximately 85 pct of capacity prevailing before the strike.

It will be a week before steel is rolling from the mills in any quantity, although some metal will be shipped within a few days due to the fact that ingots poured just before the strike will be available for heating and rolling.

Estimates of the time required to get back to normal range from 3 weeks to as much as 35 days.

Chief bottleneck will be the blast furnaces. Some operators expect them to be "sick" for as much as a week. Initial taps will come within a few days, but they are expected to be so high in silicon and sulphur that they'll be poured into cinder pots and hauled away.

Expect Heavy Scrap Charges

Meanwhile, heavier charges of scrap will be substituted for hot metal in the openhearths. But it was pointed out that for high carbon heats scrap is a poor substitute. There is some cold iron available, but hardly enough to bridge the gap.

The openhearths themselves will constitute a problem.

One company is reported to have lost 33 roofs as early as 10 days ago. In addition, more roofs are expected to cave in with return to melting temperatures.

While some refractories producers were confident they will be able to meet the expected heavy demand following resumption of operations, at least one indicated that a shortage of silica brick is likely to develop. He pointed out that two carloads of brick are necessary to rebuild one roof.

Some Repairs Delayed

Refractories producers have been in constant touch with steel companies in an effort to determine their post-strike needs, and have been building up inventories so that they will be in a position to ship promptly. Steel companies normally do not carry a large inventory of brick. Such repairs have not been possible during the strike, as this does not come under the union definition of maintenance under strike conditions.

Generally speaking, producers do not expect material shortages to develop, although at least one mill expected possible bottlenecks in limestone and dolomite.

Unions Have Cooperated

Union officials have cooperated with producers in maintaining plants so that operations can be resumed with a minimum of delay. There were few exceptions to this. One company reported that refusal of the union to go along with repairs on a continuous annealing furnace will hold up operations as much as a week.

Operating officials are optimistic that worker efficiency will be good. The long layoff has pinched many steelworkers in the pocket book to the point where they will be anxious to get going and increase their earnings in an effort to offset strike losses.

Industry's Reaction

New York—Benjamin F. Fairless, U. S. Steel president, followed announcement of the Bethlehem settlement by about an hour with this statement:

"We renew our earlier proposal to sit down with the steelworkers union in an endeavor to negotiate a mutually satisfactory program of insurance and pensions for our employees. Of course, we will study the Bethlehem statement which was announced tonight."

Cleveland—Charles M. White, president, Republic Steel Corp., said on Monday night he would have to make a study of the Bethlehem settlement. He had no comment to make on Philip Murray's statement that Republic Steel was expected to come to an agreement with the union.

Pittsburgh—Officials of Jones & Laughlin Steel Corp., in an unprecedented move Monday night, said they would make an all-night study of the Bethlehem agreement.

Washington—Meetings scheduled here between Federal Mediator Cyrus S. Ching and J & L, Republic and Youngstown Sheet & Tube, to be held Tuesday of this week were cancelled Monday night. They will not be held unless future events dictate.

Some Steel Consumers Must Close to Rebuild Inventories

Chicago—Steel consumers are busy trying to calculate when full production can be restored. On the whole, most durable goods will feel the full effect of the 30-day strike about the last 2 weeks in November. The gap between the end of the strike and normal

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steel shipments varies with products. Each consumer is also affected differently. On the average it will be Dec. 1 before most steel consumers in the Midwest will be able to regain a good enough steel inventory to resume full production schedules.

Sheets Are Most Needed

Metal users found out long ago they can't run plants off the tailgate of a truck. They therefore are going carefully and not ordering back furloughed employees until they have a decent inventory of steel. Even cold drawing plants report that their operations will limp along until at least the last week in November.

Cold-rolled and hot-rolled sheets are the items most needed. The mills won't even talk about delivery promises on new orders. Orders already on the books before the strike will take 4 to 6 weeks to clean up. Automotive makers and allied parts suppliers have already jumped back into conversion. These tonnages won't reach them any sooner than regular mill shipments. In fact, because of cross hauling, excessive handling, etc., conversion tonnage delivery will not start to come through until about Dec. 1.

Consumers can't turn to warehouses to supplement their stocks of items in short supply because the warehouses are almost cleaned of popular items. These warehouses won't replenish their stocks any faster than can the manufacturing plants.

On the whole, consumers report that their orders have held up well right along the line for all equipment and they will strive to reach full production immediately. With a few exceptions they are not sure how long their markets will remain firm. However, at the moment it would appear that, through the end of the year and through the first quarter of next year, demand for consumer durable goods will remain strong and steel will be in very short supply.

Auto Producers Will Face Important Decisions After Strike

Detroit—The end of the steel strike is going to see some fast footwork and lightning decisions on the part of auto company managers and steel buyers. Almost overnight auto makers are going to have to chart a course through the following possibilities: (1) Continue production to the end of the current model run and risk a comparatively long shutdown; (2) taper off production as soon as possible and run at half speed until steel banks are built up again to a safe level; (3) make arrangements and put up the cash required to buy steel through conversion channels.

Future Will Be Difficult

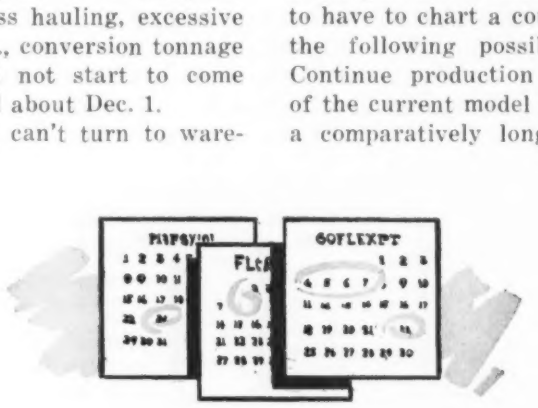
None of these paths will be easy. Much will depend on new model plans and progress already made on the new cars. If new models are already under way—a condition known to exist in several plants—strenuous efforts will be made to get steel for sampling of all dealers. Once this job is accomplished, the pressure will still exist to exploit the new models to the greatest extent possible.

If the model run is now near completion, reasonable efforts will undoubtedly be made to complete existing schedules. Most producers will then be inclined to take a shutdown in the near future rather than risk a second shutdown at a later date.

Steel Shortage Will Last

A third possibility is to cut production within a week or 10 days by as much as half in some plants. The producer will then hold operations at this level until steel inventories are built up again. Most car producers feel the steel strike has already cost the industry 2 weeks output. The industry must pay this price sooner or later. Dislocations in steel output thus far will be felt in auto plants at least through next March, some auto executives believe. If a wild scramble for steel develops as steel output is resumed, the auto production calendar will be set back even further.

Another source of worry to the industry is the steel banks of its suppliers. While steel companies on strike have felt little pressure from these sources, steel companies continuing in operation have been called on frequently during recent weeks to help out a vendor in need of steel.



Dates to Remember

Oct. 31-Nov. 3	**American Institute of Steel Construction**, annual convention, White Sulphur Springs, W. Va.
Nov. 7-10	**American Institute of Chemical Engineers**, annual meeting, Pittsburgh.
Nov. 10-11	**National Foundry Assn.**, annual meeting, New York.
Nov. 30-Dec. 2	**Society for Experimental Stress Analysis**, annual meeting, New York.
Dec. 8-10	**American Institute of Mining & Metallurgical Engineers**, Electric Furnace Steel Committee, annual conference, Pittsburgh.
1950	
Jan. 9-13	**Society of Automotive Engineers**, annual meeting, Detroit.
Jan. 15-19	**Associated Equipment Distributors**, annual meeting, Chicago.
Jan. 20	**Malleable Founders' Society**, semiannual meeting, Cleveland.
Jan. 22-24	**Institute of Scrap Iron & Steel, Inc.**, annual convention, Washington.

Bethlehem Earnings Set New Record for 9 Months

New York — Bethlehem Steel Corp.'s net income of $82,898,402 for the first 9 months of 1949 set a record for any comparable period, Eugene G. Grace, chairman, declared here last week. For the same period of 1948 the corporation earned $53,183,858. For the third quarter of this year Bethlehem earned $23,019,799, compared with $22,584,752 for the third quarter of 1948.

Third quarter billings were $326,380,045, compared with $324,761,072 during the third quarter of 1948. The company operated at an average of 89.2 pct of rated capacity during the third quarter, producing 3,176,040 net tons of ingots and castings. This rate compares with 100.5 pct during the second quarter of 1949 and with 99.7 pct operations during the third quarter of 1948.

On the business side Mr. Grace was pessimistic about losing substantially all of its export business as a result of sterling devaluation and creation of new foreign steel capacity. The rise of foreign shipbuilding means the domestic industry is "finished" unless the government does something about it, he commented. Bethlehem is now getting manganese ore from Russia, India and South Africa, Mr. Grace said.

M. A. Hanna Net Increases

Cleveland—The M. A. Hanna Co., Cleveland, reported a net profit of $2,871,015 for the third quarter of 1949. The profit is equal, after preferred dividends, to $2.69 a share on the 1,030,464 outstanding common shares. In the corresponding quarter last year, net profit was $2,552,749 or $2.38 a common share.

Net profit for 9 months of 1949 amounted to $7,237,060, equal to $6.74 a common share, and compares with $6,502,418, or $6.02 a common share, in the 1948 period.

STEEL COMPANY EARNINGS—1949 AND 1948

Company	Third Quarter '49	Third Quarter '48	Nine Months '49	Nine Months '48
U. S. Steel	$39,171,144	$34,599,132	$133,223,409	$88,042,150
Bethlehem	23,019,799	22,584,752	82,898,402	53,183,858
Republic Steel	9,870,703	12,874,398	35,347,874	29,812,788
Jones & Laughlin	4,870,019	8,757,416	20,038,918	20,249,317
National Steel	10,047,905	11,175,400	35,916,812	27,201,435
Inland Steel	7,555,103	9,811,133	23,842,637	24,819,526
Armco Steel	6,584,411	8,347,966	22,693,044	20,372,369
Copperweld Steel	204,258	1,304,188	1,425,737	3,031,384
Alan Wood Steel	62,920	1,109,534	1,835,172	2,383,890
Midvale	.....	.....	*944,732*	.....
Rotary Electric Steel	*115,498*	591,303	1,206,254	1,689,656
Keystone Steel	1,266,654	860,238	.....	.....
Harrisburg Steel	*76,919*	309,227	488,573	721,396
Acme Steel	929,221	1,660,269	3,327,749	5,102,269
Thomas Steel	203,370	402,008	929,945	1,357,492
Youngstown S. & T.	7,514,626	8,806,000	28,557,991	19,566,468
Inland Steel	7,555,103	9,811,133	23,842,637	24,819,526
Allegheny Ludlum	*183,341*	1,492,157	1,376,660	4,423,972
Continental Steel	205,449	407,838	1,004,304	1,027,509
Detroit Steel	389,714	1,205,706	2,391,088	3,703,748
Superior Steel	*904,627*	247,848	*590,806*	826,698

Italics—Deficit.

No Early Action Seen On Steel's Request to End Suit

Washington—No action is likely on the steel industry's proposal to the Federal Trade Commission to end the current price-fixing conspiracy charges until after newly-appointed Commissioner James Mead is seated. The former New York senator will be sworn in on Nov. 16. There is also an outside chance that FTC will not act on such an important proposal until after President Truman fills the vacancy caused by the recent death of Commissioner Davis.

U. S. Steel Profit Increases

New York—U. S. Steel Corp. has reported third quarter net income of $39,171,144 on sales of $605 million, shipments of 4,781,000 net tons and average employment of 291,467. For the third quarter of 1948 it earned $34,599,132 on sales of $620 million, shipments of 4,916,185 net tons and average employment of 300,097.

For the first 9 months of this year its net income was $133,223,409, on sales of $1,916,776,923. This compares with a profit of $88,042,150 for the first 9 months of 1948, when sales amounted to $1,754,721,055. Shipments of steel products in the first 9 months of 1949 and 1948 15,549,000.

Bidders to Get Specifications For Lone Star's East Texas Mill

Houston, Tex.—Within 2 weeks Lone Star Steel Co. will release to bidders specifications for construction of their steel mill in East Texas. Estimated construction cost is $52.5 million and will include four 190-ton openhearths, a 110-in. slabbing mill, one 4-high 72-in. reversing rod strip mill, and an electric weld pipe mill to make 350,000 tons of pipe per year up to and including 16 in. in diam.

RFC is committed for a first mortgage loan of $36 million toward financing the project. Additional funds to be used during the construction period have been arranged from East Texas banks. Contractors and equipment makers are reported willing to take a portion of their payment in long term junior debentures. An additional $8 million in new equity capital will be required from present stockstockholders or by sale of stock.

Wins Plaque for Safety

Youngstown—Cold strip department at the Campbell plant of Youngstown Sheet & Tube Co. recently received a bronze plaque for operating more than one million man hours without a disabling injury. The plaque was presented to C. J. Daley, superintendent, by J. S. Stanier, general superintendent.

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Viewing the News from

The ECONOMIC SIDE

By JOSEPH STAGG LAWRENCE

"Reverse Corruption"

The Daily Observer

NEW YORK, Oct. 15: It is rumored that the Excelsior Corp. is having no luck in raising the $40 million for its steel plant in High Falls, Ore. The failure of this financing may also affect operations at the company's automobile plant at Karburg, Ill.

WASHINGTON, Oct. 18: The Excelsior Corp. has applied to the Reconstruction Finance Corp. for a loan of $40 million to finance its steel and automotive operations.

WASHINGTON, Oct. 20: The RFC denies news reports that it is providing $40 million credit for the Excelsior Corp.

HIGH FALLS, ORE., Oct. 20: CIO renews demands on Excelsior management for 10 pct wage increase across the board, 10 pct pension fund, and 5 pct for social security. Excelsior management claims it is losing money. Points to failure of attempted financing in private capital market. President says company cannot afford wage increase or fringe concessions.

WASHINGTON, Oct. 21: RFC again denies that it has taken any favorable action on Excelsior financing.

HIGH FALLS, ORE., Oct. 23: Peter Prince, president, Excelsior Corp., announces settlement of dispute with CIO. Under compromise deal, union gets 10 pct wage increase across the board, 10 pct for pension fund, and 5 pct for social security.

WASHINGTON, Oct. 24: RFC announces approval of $40 million loan to Excelsior Corp.

This is a true story. Only the names are fictitious. The dates and amounts are only slightly off the beam. Maybe this sequence is "purely fortuitous." Everyone with an I.Q. above idiocy will recognize it as a glaring instance of reverse corruption. What is reverse corruption?

According to the textbooks, the government of a democracy is chosen by universal suffrage. It serves all the people with scrupulous impartiality, favoring neither the rich nor the poor, the colored or the whites, the Dodgers or the Yankees. Its officials are above temptation. They deal at arms length with all problems affording any opportunity for self-service.

These same textbooks describe the occasional deviation of public servants. They are invariably seduced by corporate tycoons, wicked capitalists or benighted reactionaries trying to stay the wheels of progress or thwart social justice. This concept of public integrity carries the same date line as Eliza crossing the ice.

"Progress" has reversed the course of corruption. Today it is the public official who reaches into the tax till filled by your contributions and mine. With these he buys the approval of large voter masses that he may remain in office. The seduction of special groups by subsidies and direct payments has become such an established feature of the American scene that it no longer excites comment.

This deterioration of public integrity and the complacence with which it regards its own venality is one of the most disturbing features of the period. Today labor is on the move for a fourth round of postwar favors. The alliance between the administration and professional unioneers is open. Neither party questions the propriety of this association or apologizes for the exchange of support.

The government uses its power of investigation, its authority to tax, its enormous prestige, even its emergency banking functions in a frank effort to give its followers those special favors which will insure their loyalty at the polls. Maybe this is democracy. It looks more like moral insolvency and political decadence. If this is the authentic wave of the future, then the mortal enemy of American freedom is not in the Kremlin but in Washington.

Steel Strike Increases Activity in Scrap Markets

Speculation more rampant now than at any time since '48 boom days.

Chicago—The steel strike so far increased rather than decreased activity in the scrap market. Speculation is more rampant now than at any time since the booming market of early 1948. The majority of brokers, believing that the strike would either be short-lived or would not affect the finished steel market when it was over, chose to take a long position. When this philosophy will change is the question.

Dealers yards in the Chicago area are full of scrap. The dealers have been accepting brokers orders for shipment after the strike. Late last week some of these dealers started to get a little worried. The prices the brokers offered were good prices, $28.00 to $30.00 for No. 1 heavy melting, but to a dealer it is a no-good order as he has not received payment and cannot ship. Some of the dealers late last week started to ask the brokers for partial down payment on these lay-away orders.

Hinges on General Business

If the finished steel market is good when the strike is over, it will put the dealer back in business. Generators of scrap will not have any important tonnages for 30 to 60 days and the mills, if they want to buy scrap, will have to rely on shipment from the yards. No one expects a runaway scrap market as the mills have sufficient inventories to combat it. Scrap today is held in strong hands by well heeled companies in the business, but if enough dealers get panicky and ask for part payment the bull tendencies of the brokers may change.

Going prices of the scrap market in THE IRON AGE are based on what can be shipped and is being paid for. It is apparent that some of the long interests would like to have the trade magazines raise the price on the basis of lay-away scrap prices.

Strike Slashes Chicago Capacity 24 Pct

Shutdown has already caused damage to 31 openhearths in this area . . . At least 14 days will be needed to reach blast furnace capacity—*By D. I. BROWN.*

Chicago—Chicago's openhearth ingot capacity has been decreased by 24 pct as a result of damage to furnaces caused by the strike shutdown. This damage cannot be repaired until the strike is over. By actual count the number of openhearth furnaces damaged in the five major steel plants in this area is 31. It will take 2 to 4 weeks to remedy this deficiency and bring the potential ingot capacity back to prestrike levels.

Operating superintendents here report that it will take 14 days after the strike to reach full capacity output of iron from the blast furnaces. During this time some of the damaged openhearth roofs, slag pocket arches, etc., can be repaired, but full steel ingot output will not be reached in the first two weeks after the lights come on again.

Masons Will Be Scarce

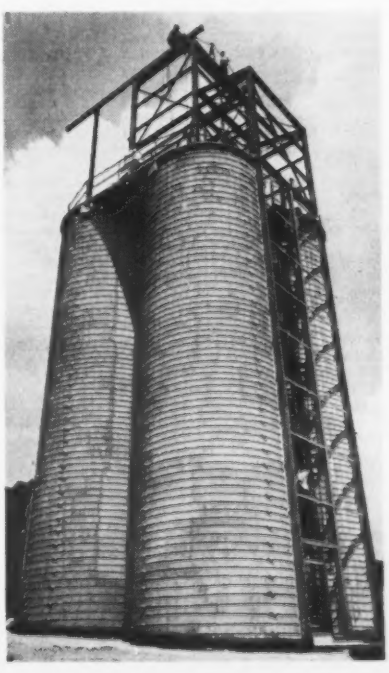
Operations will differ in each and every shop. Hot metal shops will differ from cold metal shops. Electric furnace melting units and the bessemers will be going full tilt before any of the openhearth shops can reach capacity. One company reported it will take 4 days before they tap their first openhearths.

All available masons will be pressed into service to repair the brick work the plant over. The trouble is that there probably won't be enough of such men during the first few weeks. They can't all be used for straight strike damage repair work as maintenance emergency work and unexpected breakouts may occur in other spots.

Some of the openhearth roofs now gone would have had to be replaced in the course of normal use. However, in taking the heat off and shutting down, all such roofs near the end of their normal campaign caved in at the same time. These replacements ordinarily would have been spread over a period of weeks. It costs about $12,000 to replace a typical suspended silica brick openhearth (short) roof so that the 31 replacements needed add up to approximately $372,000. This money will have to be spent immediately. Other items often repaired or replaced when a furnace goes down will be in addition to this figure.

Some of the brick work now intact is expected to spall and fail when again subjected to high temperatures. Thus a few units not now listed as damaged will be added to the strike toll. Coke ovens and blast furnace units are reported still in good condition and little damage is expected in these units unless the strike lasts 90 days or longer.

SOLVES HANDLING PROBLEM: Four huge silos, each 68 ft high and 14 ft in diam, loaded by an outsized vacuum cleaner will shortly eliminate most of the dust and hand shoveling formerly associated with handling clays at Westinghouse Electric Corp.'s porcelain plant at Derry, Pa. Sides of the silos are moisture proofed to prevent the clays from absorbing an excess of water.



Rolling Will Start Early

Rolled steel output will start long before the full openhearth steel production gets going. The mills so balanced their shutdown operations that practically all soaking pits for the primary mills were charged with ingots.

At the bar mills rolling will start about 4 hr after fuel and power become available. These mills will live off their billet inventories until the primary mills again furnish them with enough semifinished material. This same situation will apply on continuous strip and plate mills, rail mills, and so on.

Operating men here say it will take 3 to 4 weeks after the strike ends before the mills will reach 90 pct of full capacity production of steel ingots. This is barring any unexpected accidents or damage to major power, coke, iron or steel units as they are brought back into production.

Coal Is Still a Problem

Should the coal strike not be settled by the time the steel workers return to their jobs, the whole schedule of start-up operations will be affected. Operators here say under such conditions they won't attempt to return to full capacity output at once as existing coal supplies would then cause another curtailment within a matter of weeks.

Strike Damage to Openhearth Furnaces in the Five Major Chicago plants.

	No. of Openhearth Furnaces	No. Damaged**	Undamaged Available Units
Plant A*	53	14	39
Plant B	34	7	27
Plant C*	31	7	24
Plant D*	4	1	3
Plant E*	9	2	7
	131	31	100
Percent of capacity (Openhearth only)	100%	24%	76%

* Bessemer and/or electric furnaces unaffected.
** Amount of damage varies. One plant has 9 short roofs and 5 full roofs to replace. It costs $12,000 to replace the short and $27,000 to replace full roofs.

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MANUFACTURERS OF SMALL PARTS

Structural Steel Shipments Rise

September shipments totaled 151,346 tons . . . First 9 months' bookings are 30 pct under same 1948 period.

New York—The estimated total shipments of fabricated structural steel for the month of September, according to reports received by the American Institute of Steel Construction, Inc., totaled 151,346 tons. Shipments for the first 9 months of the year have totaled 1,486,152 tons as compared with 1,477,712 tons for the corresponding months of 1948.

Bookings for September totaled 118,187 tons, an increase from the 98,406 tons reported for August. Bookings for the 9 months, however, are some 30 pct less than those reported for the same period last year.

The backlog (tonnage available for future fabrication) for the next 4 months only, stands at 562,-211 tons.

The complete tabulation of bookings and shipments are as follows:

	Estimated Total Tonnage for the Entire Industry		
	1949	1948	Ave. 1936/1940
CONTRACTS CLOSED			
Jan.	130,418	160,634	107,578
Feb.	108,764	130,119	96,280
Mar.	149,079	213,123	124,558
Apr.	98,802	154,082	110,783
May	116,975	141,764	126,237
June	96,952	162,367	125,835
July	125,585*	177,687	152,481
Aug.	98,406*	172,485	113,135
Sept.	118,187	180,422	137,982
Totals	1,043,168	1,492,683	1,094,869
SHIPMENTS			
Jan.	152,746	146,363	92,578
Feb.	145,879	141,356	88,626
Mar.	185,885	167,029	115,031
Apr.	179,206	166,687	123,650
May	171,101	186,915	123,225
June	172,260	157,109	129,969
July	145,313*	160,780	127,422
Aug.	182,416*	176,306	136,389
Sept.	151,346	174,967	137,255
Totals	1,486,152	1,477,712	1,074,145
TONNAGE AVAILABLE FOR FABRICATION WITHIN THE NEXT 4 MONTHS	562,211	698,230	362,278

*Revised

Fabricated steel awards this week included the following:

8000 Tons, Johnsonville, Tenn., power plant for Tennessee Valley Authority, to Ingalls Iron Works Co., Birmingham.

1500 Tons, Seattle, Grosvenor apartment building, to Bethlehem Pacific Coast Steel Corp., Seattle.

1100 Tons, Seattle, Federal Reserve Bank building, to Bethlehem Pacific Coast Steel Corp., Seattle.

860 Tons, Ft. Wayne, Ind., store building for Kresge Co., to Ft. Wayne Structural Steel Co., Ft. Wayne, Ind.

600 Tons, Beaumont, Tex., power station for Gulf States Utility Corp., through Stone & Webster Engineering Corp., Boston, to Consolidated Western Steel Corporation, Orange, Tex.

500 Tons, Milwaukee, ice cream plant Luick Co., to Milwaukee Bridge and Iron Co., Milwaukee.

330 Tons, Chicago, Simpson St. bridge for Eden Parkway, Section 263-0607-1-14D to American Bridge Co., Pittsburgh.

160 Tons, Brooklyn, N. Y., St. Mary Queen of Heaven Parochial School, to Grand Iron Works, New York.

130 Tons, Westville, Ind., kitchen for the Northern Indiana Hospital to Zweig and Sons Co., Gary, Ind.

Fabricated steel inquiries this week included the following:

2500 Tons, Philadelphia, hospital for Veteran's Administration, due Dec. 6.

1300 Tons, Marshalltown, Iowa, Center St. overhead bridge reported last week. Bids due Oct. 25.

150 Tons, Galesburg, Ill., Athletic Bldg., at Knox College, bids due Nov. 8.

130 Tons, Philadelphia, office building for International Ladies Garment Union, due Nov. 3.

100 Tons, Walla Walla, Wash., bridges at Four Mile and Spukshowki canyons, Walla Walla District Corps of Engineers, bids to Dec. 6 (tentative date).

Reinforcing bar awards this week included the following:

2000 Tons, Birmingham, Ala., hospital for Veterans Administration, to Ceco Steel Products Corp., Birmingham.

500 Tons, York, Pa., hospital, through I. Reindollar & Son, York, Pa., to Bethlehem Steel Co., Bethlehem.

460 Tons, Chicago, University of Illinois Research and Educational Bldg., Patton Warren Construction Co., Chicago, low bidder.

300 Tons, West Chester, Pa., high school. Wark & Co., Philadelphia, low bidder on general contract.

250 Tons, Chicago, bottling plant for the U. S. Brewing Co., to M. J. Boyle Co., Chicago.

225 Tons, Marshalltown, Iowa, Central St. overhead, Jensen Construction Co., Des Moines, Iowa, low bidder.

195 Tons, Elgin, Ill., Sherman Hospital building through Peter Hamlin Co., Chicago, to Dean Steel Co., Chicago.

140 Tons, Chicago, Skokie River bridge to U. S. Steel Supply Co., Chicago.

135 Tons, Ft. Dodge, Iowa, building for Certain-Teed Products Corp., to Turner Construction Co., Chicago.

115 Tons, Columbus, Ohio, building for Farm Bureau Cooperative Assn., to Pollack Steel Co., Cincinnati.

Reinforcing bar inquiries this week included the following:

300 Tons, Chicago, grade separation on the Eden Parkway.

250 Tons, Clinton, Iowa, building for Certain-Teed Products Corp., Chicago.

195 Tons, Chicago 12 story apartment building north side.

160 Tons, San Francisco, Lake Merced Sewer tunnel, section B, Dept. of Public Works, bids to Nov. 16.

150 Tons, Sheridan, Ill., Illinois State Reformatory building.

110 Tons, DeKalb, Ill., Northern Illinois State Teachers College building.

105 Tons, Lane County, Ore., viaduct over S.P. tracks near Eugene, Oregon State Highway Commission, Portland, bids to Nov. 8.

100 Tons, Chicago, Peoria St. bridge.

Briefs and Bulletins

how much is 30 days?—Auto executives this week explained to THE IRON AGE that if they said they had 30 days' steel supply on hand it did not mean they could build cars for 30 days. To arrive at the 30-day figure they take *total tonnage* on hand and divide by average daily consumption. On some items they might have only a week's supply. Several of the short items are likely to be flat-rolled steel. When regular delivery of one type item stops inventories are unbalanced. Here, as elsewhere, this is the production stopper.

conversion deals—Conversion deals popped up again this week, mostly as a conversational topic, in some Midwest steel centers. Reportedly based on some guarded inquiries from consumers in the automotive industry, conversion arrangements are being tentatively considered to set up a quick supply of flat-rolled following the strike. Mill space, rather than ingots, is the problem. Mills with excess electric furnace capacity, particularly those with electric furnace capacity idle before this strike, would probably turn a receptive ear to conversion deals.

pattern?—Philip Murray told the press conference at which he and Joseph Larkin, Bethlehem vice-president, announced the new pact, that this was the first time in the history of steel labor negotiations that any company other than U. S. Steel had set the pattern for a settlement. Mr. Murray may have had his tongue in his cheek when he assumed this was a pattern, as he must have when he intimated that U. S. Steel might be more generous.

freight car backlog—The backlog of freight car orders dwindled to 22,203 on Oct. 1, about one fifth as many as at the beginning of the year. There were 72,885 new freight cars put in service in the first 9 months of 1949, compared with 77,848 during the like 1948 period.

low-priced car—Kaiser-Frazer expects to have its low-priced car in production by next spring. The car is designed to compete with Ford, Chevrolet and Plymouth in their price field. The proposed car is of standard size, with a pointed front end, and streamlined fenders.

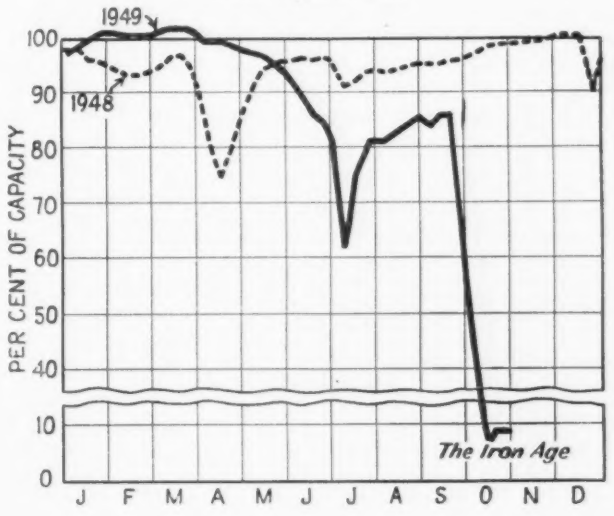
rail order—The St. Louis-San Francisco R. R. has ordered 27,500 tons of 132 lb and 115 lb rails from Tennessee Coal & Iron Co.

reopening—Granted a new lease on life due to the strike-caused steel shortages, Apollo Steel Corp., Apollo, Pa., will resume production next Monday, reemploying some 600 steelworkers. The plant, equipped with high-cost hand sheet mills, was closed last summer when demand fell off and it was unable to compete. Galvanizing operations were resumed last month, but that department was shut down this week for lack of sheets. Sheet bar for the hand mills will be obtained from Portsmouth and Empire steel companies. Orders are sufficient to maintain operations at least 3 months.

struck—When an eleventh-hour negotiating conference failed, the CIO, United Steelworkers of America, struck five plants of Allegheny Ludlum Steel Corp., employing 12,500 workers, Nov. 1. Allegheny Ludlum was not struck Oct. 1 because its contract expired a month later than agreements of other major steel firms. Plants closed were those at Brackenridge and West Leechburg, Pa., and Dunkirk, Buffalo and Watervliet, N. Y.

consolidation—The domestic scrap iron and steel department of Chas. Dreifus Co. has been taken over by Luria Steel & Trading Co. Walter S. Gates, former vice-president and treasurer of Chas. Dreifus has been appointed district manager of the Philadelphia office. The new office will be at 12 S. 12th St., Philadelphia.

Steel Operations



District Operating Rates—Per Cent of Capacity

Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	Cleveland	Buffalo	Wheeling	South	Detroit	West	Ohio River	St. Louis	East	Aggregate
October 23	3.0*	5.5*	.....	7.0	.....	.....	65.0	.....	26.0*	23.5	36.5	78.0	35.0	9.5
October 30	2.0	5.0	.....	7.0	.....	.....	65.0	.....	26.0	24.5	37.0	91.5	35.0	9.5

* Revised.

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Nonferrous METALS OUTLOOK

Market Activities

by John Anthony

Mills receiving some cancellations and deferments of orders . . . Industry expects higher copper and zinc prices . . . Zinc raised ¼¢ . . . American metal strike ends.

New York—The effect of the steel strike so far on the nonferrous metal industries has been to retard pressure for forward buying. But with the automotive industry and some metal fabricators on the verge of closing down, mills are beginning to receive some cancellations and deferments of orders. This development has not reached significant proportions. Copper and zinc were still in heavy demand early this week.

An early end to the steel strike will do very little to reverse the closing down of fabricators, while the coal strike remains an issue to prevent maximum production by the steel industry. There will also be a lag in deliveries of steel to fabricators while the industry gears up for production. These facts will exert a retarding effect on nonferrous metals for at least a month to come.

Metals Strong Despite Strike

But the pressure for delivery of mill products, copper and zinc in spite of the steel strike shows real strength in the metal markets. The industry is talking about the possibility of higher copper and zinc prices very soon.

Requirements for copper are well beyond present production rates. But at a price of say 18.00¢ to 18.50¢ per lb, mine production could be begun again at some properties now closed down.

The price of zinc was raised by ¼¢ last week, an action followed by all market factors. It is very significant that such a development could stand up at a time when Prime Western is not being bought. This is an indication of the strength of the market. When the price of zinc was raised just before the steel strike, the market was not so strong and the increase was quickly wiped out.

NONFERROUS METALS PRICES

	Oct. 26	Oct. 27	Oct. 28	Oct. 29	Oct. 31	Nov. 1
Copper, electro, Conn.	17.625	17.625	17.625	17.625	17.625	17.625
Copper, Lake, Conn.	17.75	17.75	17.75	17.75	17.75	17.75
Tin, Grade A, New York	94.75	94.75	94.00	94.00	94.00	94.00
Zinc, East St. Louis	9.25	9.50	9.50	9.50	9.50	9.50
Lead, St. Louis	12.80	12.80	12.80	12.80	12.80	12.80

Note: Quotations are going prices.

MONTHLY AVERAGE PRICES

The average prices of the major nonferrous metals in October based on quotations appearing in THE IRON AGE, were as follows:

	Cents Per Pound
Electrolytic copper, Conn. Valley	17.625
Lake copper, Conn. Valley	17.75
Grade A tin, New York	95.49
Zinc, East St. Louis	9.32
Zinc, New York	10.04
Lead, St. Louis	13.228
Lead, New York	13.42

The tin market is still inactive, the only metal moving being a few resale lots offered by steel producers. The spot resale price is 94.00¢, a reduction from 24.75¢ last week.

Refinery Strike Ends

The 4-month-old strike at the Carteret, N. J. refinery of U. S. Metals Refining Co. was ended last week. The agreement resulted from a vote taken by the members of the Carteret Local of IMMSWU. The principal issue was the establishment of a wage incentive plan to which the union objected.

The agreement calls for the establishment of wage standards and an incentive plan. A pension plan will be set up to be paid for jointly by the company and workers. The company will pay about two thirds and the workers will pay one third.

Mill Products

Aluminum

(Base prices, cents per pound, base 30,000 lb, f.o.b. shipping point, freight allowed)

Flat Sheet: 0.188 in., 2S, 3S, 26.9¢; 4S, 61S-O, 28.8¢; 52S, 30.9¢; 24S-O, 24S-OAL, 29.8¢; 75S-O, 75S-OAL, 36.3¢; 0.081 in., 2S, 3S, 27.9¢; 4S, 61S-O, 30.2¢; 52S, 32.3¢; 24S-O, 24S-OAL, 30.9¢; 75S-O, 75S-OAL, 38¢; 0.032 in., 2S, 3S, 29.5¢; 4S, 61S-O, 33.5¢; 52S, 36.2¢; 24S-O, 24S-OAL, 37.9¢; 75S-O, 75S-OAL, 47.6¢.

Plate: ¼ in. and heavier: 2S, 3S, F, 23.8¢; 4S-F, 26¢; 52S-F, 27.1¢; 61S-O, 26.6¢; 24S-F, 24S-FAL, 27.1¢; 75S-F, 75S-FAL, 33.9¢.

Extruded Solid Shapes: Shape factors 1 to 4, 33.6¢ to 64¢; 11 to 13, 34.6¢ to 76¢; 23 to 25, 36.7¢ to $1.05; 35 to 37, 44¢ to $1.53; 47 to 49, 63.5¢ to $2.20.

Rod, Rolled: 1.064 to 4.5 in., 2S-F, 3S-F, 14¢ to 30.5¢; Cold-finished, 0.375 to 3.5 in., 2S, 3S, 36.5¢ to 32¢.

Screw Machine Stock: Drawn, ⅛ to 11/32 in., 11S-T3, R317-T4, 49¢ to 38¢; cold-finished, ⅜ to 1½ in., 11S-T3, 37.5¢ to 35.5¢; ⅜ to 2 in., R317-T4, 37.5¢ to 34.5¢; rolled, 1 9/16 to 3 in., 11S-T3, 35.5¢ to 32.5¢; 2⅛ to 3⅜ in., R317-T4, 33.5¢ to 32.5¢. Base 5000 lb.

Drawn Wire: Coiled, 0.051 to 0.374 in.: 2S, 36¢ to 26.5¢; 52S, 44¢ to 32¢; 56S, 47¢ to 33.5¢; 17S-T4, 50¢ to 34.5¢; 61S-T4, 44.5¢ to 34¢; 75S-T6, 76¢ to 55¢.

Magnesium

(Cents per lb, f.o.b. mill, freight allowed Base quantity 30,000 lb)

Sheets and Plate: Ma, FSa, ¼ in., 54¢-56¢; 0.188 in., 56¢-58¢; B & S gage 8, 58¢-60¢; 10, 59¢-61¢; 12, 63¢-65¢; 14, 69¢-74¢; 16, 76¢-81¢; 18, 84¢-89¢; 20, 96¢-$1.01; 22, $1.22-$1.31; 24, $1.62-$1.75. Specification grade higher.

Extruded Round Rod: M, diam in., ¼ to 0.311, 58¢; ½ to ¾, 46¢; 1¼ to 1.749, 43¢; 2¼ to 5, 41¢. Other alloys higher.

Extruded Square, Hex. Bar: M, size across flats, in., ¼ to 0.311, 61¢; ½ to 0.749, 48¢; 1¼ to 1.749, 44¢; 2½ to 4, 42¢. Other alloys higher.

Extruded Solid Shapes, Rectangle: M, in weight per ft, for perimeters of less than size indicated, 0.10 to 0.11 lb per ft, per. up to 3.5 in., 55¢; 0.22 to 0.25 lb per ft, per. up to 5.9 in., 51¢; 0.50 to 0.59 lb per ft, per. up to 8.6 in., 47¢; 1.8 to 2.59 lb per ft, per. up to 19.5 in., 44¢; 4 to 6 lb per ft, per. up to 28 in., 43¢. Other alloys higher.

Extruded Round Tubing: M, wall thickness, outside diam, in., 0.049 to 0.057, ¼ to 5/16, $1.14; 5/16 to ⅜, $1.02; ½ to ⅝, 76¢; 1 to 2 in., 65¢; 0.065 to 0.082, ⅝ to 7/16, 85¢; ⅝ to ¾, 62¢; 1 to 2 in., 57¢; 0.165 to 0.219, ⅝ to ¾, 54.5¢; 1 to 2 in., 53¢; 3 to 4 in., 49¢. Other alloys higher.

Nickel and Monel

(Base prices, cents per lb, f.o.b. mill)

	Nickel	Monel
Sheets, cold-rolled	60	47
Strip, cold-rolled	66	50
Rods and bars	56	45
Angles, hot-rolled	56	45
Plates	58	46
Seamless tubes	89	80
Shot and blocks		40

Copper, Brass, Bronze

(Cents per lb, freight prepaid on 200 lb)

	Sheets	Rods	Extruded Shapes
Copper	31.30	....	30.90
Copper, h-r	....	27.15	....
Copper, drawn	....	28.40	....
Low brass	29.47	29.16	32.38*
Yellow brass	28.19	27.88	31.20*
Red brass	29.89	29.58	32.80*
Naval brass	33.13	27.19	28.44
Leaded brass	....	22.76	26.85
Com'l bronze	30.84	30.53	33.50*
Manganese bronze	36.63	30.54	32.04
Phosphor bronze	50.47	50.72	....
Muntz metal	31.15	26.71	27.96
Everdur, Herculoy, Olympic, etc	36.19	35.14	....
Nickel silver, 10 pct	39.12	41.41	41.44
Arch. bronze	....	....	26.85

*Seamless tubing.

Primary Metals

(Cents per lb, unless otherwise noted)

Aluminum, 99+%, 10,000 lb, freight allowed	17.00
Aluminum pig	16.00
Antimony, American, Laredo, Tex.	32.00
Beryllium copper, 3.75-4.25% Be dollars per lb contained Be	$24.50
Beryllium aluminum 5% Be, dollars per lb contained Be	$52.00
Bismuth, ton lots	$2.00
Cadmium, del'd	$2.00
Cobalt, 97-99% (per lb)	$1.80 to $1.87
Copper, electro, Conn. Valley	17.625
Copper, lake, Conn. Valley	17.75
Gold, U. S. Treas., dollars per oz.	$35.00
Indium, 99.8%, dollars per troy oz.	$2.25
Iridium, dollars per troy oz.	$100 to $110
Lead, St. Louis	12.80
Lead, New York	13.00
Magnesium, 99.8+%, f.o.b. Freeport, Tex.	20.50
Magnesium, sticks, carlots	34.50
Mercury, dollars per 76-lb flask f.o.b. New York	$72 to $75
Nickel, electro, f.o.b. New York	42.97
Palladium, dollars per troy oz.	$24.00
Platinum, dollars per troy oz.	$69 to $72
Silver, New York, cents per oz.	73.25
Tin, New York	95.00
Zinc, East St. Louis	9.50
Zinc, New York	10.22
Zirconium copper, 10-12 pct Zr, per lb contained Zr	$12.00

Remelted Metals

Brass Ingot

(Published prices, cents per lb delivered, carloads)

85-5-5-5 ingot		
No. 115	15.50*	17.25
No. 120	14.00*	16.75
No. 123	14.50*	16.25
80-10-10 ingot		
No. 305	.....	21.75
No. 315	.....	18.75
88-10-2 ingot		
No. 210	.....	28.25
No. 215	.....	25.25
No. 245	18.00*	20.50
Yellow ingot		
No. 405	13.25*	15.00
Manganese bronze		
No. 421	.....	19.75

*F.o.b. Philadelphia.

Aluminum Ingot

(Cents per lb, lots of 30,000 lb)

95-5 aluminum-silicon alloys	
0.30 copper, max.	18.75-19.25
0.60 copper, max.	18.25-18.75
Piston alloys (No. 122 type)	16.50-17.00
No. 12 alum. (No. 2 grade)	15.50-16.00
108 alloy	16.50-17.00
195 alloy	17.50-18.00
13 alloy	18.50-18.75
AXS-679	16.50-16.75
5% Ti, Aluminum, f.o.b., Eddystone, Pa.	
Low copper	31.00
2% copper	28.00

Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—95-97½%	17.00-17.50
Grade 2—92-95%	16.00-16.50
Grade 3—90-92%	15.00-15.50
Grade 4—85-90%	14.00-14.50

Electroplating Supplies

Anodes

(Cents per lb, freight allowed, in 500 lb lots)

Copper	
Cast, oval, 15 in. or longer	34⅝
Electrodeposited	28⅞
Rolled, oval, straight, delivered	31.46
Ball anodes	32⅞
Brass, 80-20	
Cast, oval, 15 in. or longer	30⅝
Zinc, oval, 99.886, f.o.b. Detroit	17¼
Ball anodes	16¼
Nickel 99 pct plus	
Cast	59.00
Rolled, depolarized	60.00
Cadmium	$2.15
Silver 999 fine, rolled, 100 oz lots, per troy oz, f.o.b. Bridgeport, Conn.	79

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	45.00
Copper sulfate, 99.5 crystals, bbl.	11.10
Nickel salts, single or double, 4-100 lb bags, frt allowed	18.00
Nickel chloride, 300 lb bbl	24.50
Silver cyanide, 100 oz lots, per oz.	59
Sodium cyanide, 96 pct domestic 200 lb drums	19.25
Zinc sulfate, crystals, 22.5 pct, bags	6.75
Zinc sulfate, 25 pct, flakes, bbl.	7.75

Scrap Metals

Brass Mill Scrap

(Cents per pound; add ½¢ per lb for shipments of 20,000 to 40,000 lb; add 1¢ for more than 40,000 lb)

	Heavy	Turnings
Copper	14⅝	13⅞
Yellow brass	12	11
Red brass	13¼	12½
Commercial bronze	13½	12¾
Manganese bronze	11⅝	10⅞
Leaded brass rod ends	11¾	....

Custom Smelters' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire	14.50
No. 2 copper wire	13.00
Light copper	12.00
Refinery brass	12.00*
Radiators	9.00

*Dry copper content.

Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to producer)

No. 1 copper wire	14.00
No. 2 copper wire	13.00
Light copper	12.00
No. 1 composition	12.50
No. 1 comp. turnings	11.25
Rolled brass	10.00
Brass pipe	11.00
Radiators	9.50
Heavy yellow brass	9.25- 9.50
Aluminum	
Mixed old cast	10.00-10.50
Mixed old clips	10.00-10.50
Mixed turnings, dry	8.50- 9.00
Pots and pans	10.00-10.50
Low copper	11.50

Dealers' Scrap

(Dealers' buying prices, f.o.b. New York in cents per pound)

Copper and Brass

No. 1 heavy copper and wire	13 —13¼
No. 2 heavy copper and wire	11½—11¾
Light copper	10½—10¾
Auto radiators (unsweated)	8½— 8¾
No. 1 composition	10¾—11
No. 1 composition turnings	9 — 9¼
Clean red car boxes	9 — 9¼
Cocks and faucets	9 — 9¼
Mixed heavy yellow brass	7 — 7¼
Old rolled brass	8 — 8¼
Brass pipe	9¼ — 9½
New soft brass clippings	10 —10½
Brass rod ends	9¼ — 9½
No. 1 brass rod turnings	8¾ — 9

Aluminum

Alum. pistons and struts	5 — 5½
Aluminum crankcases	7 — 8
2S aluminum clippings	10½—11
Old sheet and utensils	7 — 8
Borings and turnings	4
Misc. cast aluminum	7 — 8
Dural clips (24S)	7 — 8

Zinc

New zinc clippings	5½— 6
Old zinc	3½— 4
Zinc routings	2¼— 2¾
Old die cast scrap	2½— 2¾

Nickel and Monel

Pure nickel clippings	21 —23
Clean nickel turnings	14 —15
Nickel anodes	20 —22
Nickel rod ends	20 —22
New Monel clippings	12 —14
Clean Monel turnings	8 — 9
Old sheet Monel	10 —12
Old Monel castings	9 —10
Inconel clippings	11 —13
Nickel silver clippings, mixed	8 —10
Nickel silver turnings, mixed	6 — 7

Lead

Soft scrap, lead	9½—10
Battery plates (dry)	5¼— 5½

Magnesium

Segregated solids	9 —10
Castings	5½— 6½

Miscellaneous

Block tin	70 —72
No. 1 pewter	43 —45
No. 1 auto babbitt	38 —40
Mixed common babbitt	10 —10¼
Solder joints	11½—12
Siphon tops	44 —46
Small foundry type	12½—13
Monotype	11½—12
Lino. and stereotype	10¾—11¼
Electrotype	9¼— 9½
New type shell cuttings	9
Hand picked type shells	4 — 4½
Lino. and stereo. dross	4¾— 5
Electro. dross	2¾— 3

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MARKETS—PRICES—TRENDS

SCRAP
Iron & Steel

Prices Up On News of Strike Settlement

Optimism over the Bethlehem settlement firmed prices in all markets and raised them in some areas. Brokers were having trouble picking up tonnages at prevailing quotations and in many instances were offering higher prices for what they were buying. Dealers are reluctant to part with their scrap and if the mills should all come in at the same time, trade sources expect prices to rebound to prestrike levels, and perhaps beyond. One thing is certain, the mills have not had an opportunity to build up their inventories for the coming winter months. Most of the foundries have been out of the market during the steel strike and it is expected that they will again resume their buying this month. The top quotation of No. 1 steel was up $5.00 in Chicago; in Detroit it was up $4.00; in Cincinnati and St. Louis it was up $2.00; and in Pittsburgh it was up $1.00. This week THE IRON AGE composite is up $2.00 to $27.58 per gross ton.

PITTSBURGH—Undertone of the market was strong, with the trade looking for higher prices when the strike ends. Following the Bethlehem agreement, No. 1 heavy melting steel was sold $1.00 higher than the price last week. Price on this item is now $29.50 to $30.00. Short turnings for blast furnace use jumped $1.50 to a top of $24.00 on a sale. Machine shop turnings were up 50¢ to $21.50.

CHICAGO—Purchases last week followed on the heels of favorable strike news and prices jumped $5.00 over the distressed values of the strike period. Shipping instructions were expected by the week's end. Some shipments may be embargoed because of a freight car jam at the mills. One thing for sure, the strike has put the dealer back in business. Turning and boring prices are fluid, some turnings bought and crushed during the strike will cost between $24.00 to $26.00 delivered to the mills. Further strength on all items is expected by most traders here.

PHILADELPHIA—There was no new buying of steel grades in this district last week, but the market is still on the firm side. One district consumer is reported to have several hundred cars on the siding that will not be unloaded until the end of the strike. The cast market is firmer, with yard cast having been bought at $35.00. Even with yards loaded with scrap, competition for unprepared is keen in the district. Buying prices are reported not to have been lowered due to the inactive market.

NEW YORK—The market here remains firm and quiet. There is some yard material moving, but only enough so that dealers can meet their present expenses. Prices on a large order for No. 2 heavy melting and No. 2 bundles remains unchanged since it was placed several weeks ago. The cast grades were somewhat stronger on a few purchases. Clean cast chemical borings were in fair demand and the quotation is up $1.50 to $22.00-$23.00.

DETROIT—The Detroit market is very much alive and strong. Reports well founded or otherwise that the steel strike may end abruptly within the week have sent out a wave of optimistic thinking that is reflected in current scrap prices. There has been limited buying here, both by mills and brokers but full details are not obtainable. Meanwhile, the conclusion now appears amply justified that steel conversion will be back again after the current strike is terminated. Detroit November lists totaling less than half the October tonnage will undoubtedly intensify the demand for dealer scrap, and tend to reduce the price differential between industrial and dealer scrap.

CLEVELAND—A rumor that Bethlehem Steel Co. and the USWA-CIO had reached an agreement, thus breaking the steel strike, had the scrap market here and in the Valley at a near-frenzy pitch at press time. Mills were making with the conversation and tentative commitments for tonnage were being made, according to trade sources. Dealers were holding tight to tonnage in their yards, and whistling, "Baby, It's Cold Outside," while brokers complained they could not buy.

BOSTON—The strike situation has brought about the dullest market since the early summer. Thus it is almost impossible to quote prices. The best that can be said is that No. 1 heavy melting steel is being bought at around $17.00 to $18.00, just as it has in recent weeks. However, there is so little activity, that it is difficult to determine the price. Cast is about in a similar situation. Warren Pipe Co., an important consumer, is out of the market pending strike settlement.

BUFFALO—Steelmaking items maintain their prestrike strength in the scrap market but easier tendencies are noted in the cast market. Dealers are finding it difficult to locate ingot production items at lower levels, but sales of cast material are reported at ranges running $1.00 to $2.00 below levels prevailing before the strike.

CINCINNATI—Major consumers in this district bought representative tonnages of scrap at higher prices Monday morning in a move that seemed to anticipate a break in the steel strike. The strategy seemed to be to move in and offer more money before the market breaks wide open. Dealers were reluctant to sell and brokers were having their troubles picking up much tonnage other than the foundry grades which were moving slowly. As one broker put it, "If we could buy 20,000 tons, we'd buy it."

ST. LOUIS—Steel mills and foundries came into the market for needed tonnages, for filling in, resulting in some higher prices. Shipments of scrap from strike affected centers has eased the short interest. Shipments from country dealers are good.

BIRMINGHAM—There is no demand in this market at present for any material except cast iron and electric furnace grades. Demand is particularly strong for cast but supplies are very light. Although $35.00 is the top price being paid here for No. 2 cupola cast, pipe shops at nearby Anniston are reported offering as much as $37.00. That price competes with freight that would be put on pig iron from merchant furnaces in Birmingham.

(ADVERTISEMENT)

NEW, IMPROVED WIRE

For Manufacturing Recessed Head Screws

R. S. Simmons
Chief Metallurgist
Keystone Steel & Wire Co.

A new process has been developed by R. S. Simmons, chief metallurgist of Keystone Steel & Wire Company, that results in an improved wire stock for manufacturing recessed head screws. This unique process starts with the steel that is later drawn into the wire stock. The surface of the steel stock is improved to such an extent that it is comparable in characteristics to that found in the best of high grade bars.

Advancement Over Normalizing Process

The process is a refinement and advancement of the normalized process. In air-tight vessels the steel stock is heated under the action of controlled atmospheres to produce a structure and surface necessary to withstand the severe and drastic cold upsetting of wire to be made for recessed heads of all types. After this special heat treatment, the stock is drawn through a special lubricant to an intermediate wire size and then carefully annealed in process before the final drafting to the desired final wire size.

Available in 12 Grades of Steel

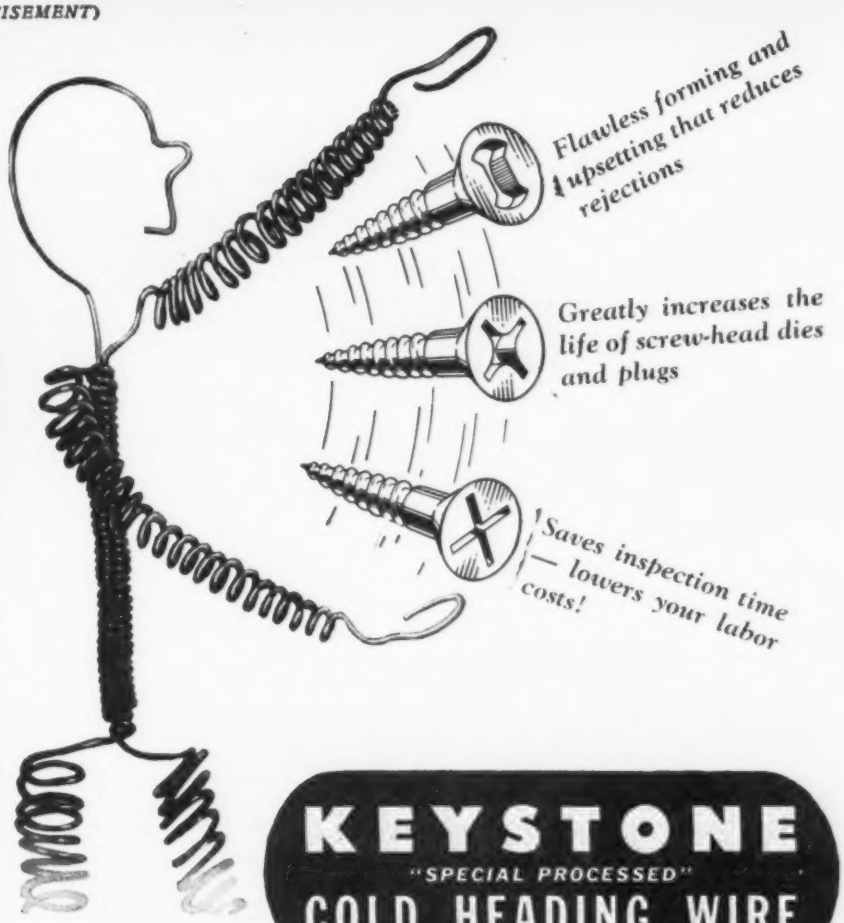
Keystone's new wire for recessed head screws is furnished in the following steel grades:

C-1006	C-1016
C-1008	C-1017
C-1010	C-1018
C-1012	C-1019
C-1013	C-1020
C-1015	C-1022

It can be used in the cold upsetting of round, flat, oval, fillister, truss, binding, pan, hexagon, and slotted recessed Phillips and Clutch Head Machine Screws, Sheet Metal Screws, Cut Screws, and Self-Tapping Screws.

Many Advantages

The cold heading industry benefits greatly from this new wire developed by Keystone . . . in increased life of dies and plugs, in reduced rejections, in less machine down time, and in savings of cost of expensive final inspection as well as a better finished product.


Flawless forming and upsetting that reduces rejections
Greatly increases the life of screw-head dies and plugs
Saves inspection time — lowers your labor costs!

KEYSTONE
"SPECIAL PROCESSED"
COLD HEADING WIRE

For recessed heads, Keystone's new special-process wire delivers the desired upsetting and die forming qualities with such a high degree of uniformity that finished product rejections are practically eliminated . . . individual inspection of screws is no longer necessary . . . die and plug life are often more than doubled. This new wire effects considerable savings in the production of Phillips head, clutch head and cross recessed head screws.

Keystone is prepared to help solve any of your industrial wire problems. If special treatment is called for, Keystone's metallurgical research and testing facilities are available to supply the answers. We welcome your inquiry.

KEYSTONE
STEEL & WIRE CO.
PEORIA . . . ILLINOIS

Special Analysis Wire, Setting New Standards of Performance

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Scrap IRON & STEEL Prices

Going prices as obtained in the trade by THE IRON AGE, based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Pittsburgh

No. 1 hvy. melting	$29.50 to $30.00
No. 2 hvy. melting	27.50 to 28.00
No. 1 bundles	29.50 to 30.00
No. 2 bundles	23.50 to 24.00
Machine shop turn.	21.00 to 21.50
Mixed bor. and ms. turn.	21.00 to 21.50
Shoveling turnings	23.50 to 24.00
Cast iron borings	22.50 to 23.00
Low phos. plate	32.00 to 32.50
Heavy turnings	24.00 to 25.00
No. 1 RR. hvy. melting	29.50 to 30.00
Scrap rails, random lgth.	34.00 to 35.00
Rails 2 ft and under	38.00 to 39.00
RR. steel wheels	33.00 to 34.00
RR. spring steel	33.00 to 34.00
RR. couplers and knuckles	33.00 to 34.00
No. 1 machinery cast.	39.00 to 40.00
Mixed yard cast.	36.00 to 37.00
Heavy breakable cast.	29.00 to 30.00
Malleable	32.00 to 33.00

Chicago

No. 1 hvy. melting	$30.00 to $31.00
No. 2 hvy. melting	29.00 to 30.00
No. 1 factory bundles	30.00 to 31.00
No. 1 dealers' bundles	28.00 to 29.00
No. 2 dealers' bundles	26.00 to 27.00
Machine shop turn.	20.00 to 21.00
Mixed bor. and turn.	19.00 to 20.00
Shoveling turnings	22.00 to 23.00
Cast iron borings	20.00 to 21.00
Low phos. forge crops	36.00 to 37.00
Low phos. plate	33.00 to 34.00
No. 1 RR. hvy. melting	31.00 to 32.00
Scrap rails, random lgth.	38.00 to 39.00
Rerolling rails	43.00 to 44.00
Rails 2 ft and under	42.00 to 43.00
Locomotive tires, cut	39.00 to 40.00
Cut bolsters & side frames	33.00 to 35.00
Angles and splice bars	35.00 to 36.00
RR. steel car axles	44.00 to 45.00
No. 3 steel wheels	32.50 to 33.50
RR. couples and knuckles	34.00 to 35.00
No. 1 machinery cast.	41.00 to 43.00
No. 1 agricul. cast.	40.00 to 41.00
Heavy breakable cast.	32.00 to 34.00
RR. grate bars	30.00 to 31.00
Cast iron brake shoes	30.00 to 31.00
Cast iron car wheels	32.00 to 34.00
Malleable	36.00 to 37.00

Philadelphia

No. 1 hvy. melting	$22.00 to $23.00
No. 2 hvy. melting	20.50 to 21.50
No. 1 bundles	21.50 to 22.50
No. 2 bundles	19.50 to 20.50
Machine shop turn.	15.50 to 16.50
Mixed bor. and turn.	14.00 to 15.00
Shoveling turnings	16.50 to 17.50
Low phos. punchings, plate	25.50 to 26.00
Low phos. 5 ft and under	24.50 to 25.00
Low phos. bundles	24.50 to 25.00
Hvy. axle forge turn.	23.00 to 24.00
Clean cast chem. borings	26.00 to 27.00
RR. steel wheels	28.00 to 28.50
RR. spring steel	28.00 to 28.50
Rails 18 in. and under	35.00 to 36.00
No. 1 machinery cast	36.00 to 38.00
Mixed yard cast	34.00 to 35.00
Heavy breakable cast	32.00 to 33.00
Cast iron carwheels	34.00 to 35.00
Malleable	34.00 to 35.00

Cleveland

No. 1 hvy. melting	$24.50 to $25.00
No. 2 hvy. melting	22.00 to 22.50
No. 1 busheling	24.50 to 25.00
No. 1 bundles	24.50 to 25.00
No. 2 bundles	17.50 to 18.00
Machine shop turn.	14.00 to 14.50
Mixed bor. and turn.	15.50 to 16.00
Shoveling turnings	15.50 to 16.00
Cast iron borings	15.50 to 16.00
Low phos. 2 ft and under	26.00 to 26.50
Steel axle turn.	24.50 to 25.00
Drop forge flashings	24.50 to 25.00
No. 1 RR. hvy. melting	32.00 to 33.00
Rails 3 ft and under	40.00 to 41.00
Rails 18 in. and under	41.00 to 42.00
No. 1 machinery cast.	43.00 to 44.00
RR. cast.	43.00 to 44.00
RR. grate bars	32.00 to 33.00
Stove plate	36.00 to 37.00
Malleable	38.00 to 39.00

Youngstown

No. 1 hvy. melting	$28.50 to $29.00
No. 2 hvy. melting	26.00 to 26.50
No. 1 bundles	28.50 to 29.00
No. 2 bundles	$20.00 to $20.50
Machine shop turn.	14.50 to 15.00
Shoveling turnings	17.50 to 18.00
Cast iron borings	17.50 to 18.00
Low phos. plate	29.50 to 30.00

Buffalo

No. 1 hvy. melting	$27.00 to $27.50
No. 2 hvy. melting	24.50 to 25.00
No. 1 busheling	24.50 to 25.00
No. 1 bundles	25.50 to 26.00
No. 2 bundles	23.00 to 23.50
Machine shop turn.	18.00 to 18.50
Mixed bor. and turn.	19.00 to 19.50
Shoveling turnings	21.50 to 22.00
Cast iron borings	19.00 to 19.50
Low phos. plate	29.00 to 29.50
Scrap rails, random lgth.	33.50 to 34.00
Rails 2 ft and under	37.50 to 38.00
RR. steel wheels	33.50 to 34.00
RR. spring steel	33.50 to 34.00
RR. couplers and knuckles	33.50 to 34.00
No. 1 cupola cast	37.00 to 37.50
Mixed yard cast	35.50 to 36.00
Stove plate	35.00 to 35.50
Small indus. malleable	24.00 to 24.50

Birmingham

No. 1 hvy. melting	$25.00
No. 2 hvy. melting	24.00
No. 2 bundles	22.00
No. 1 busheling	24.00
Machine shop turn.	$16.00 to 17.00
Shoveling turnings	19.00
Cast iron borings	18.00
Bar crops and plate	29.00 to 30.00
Structural and plate	29.00 to 30.00
No. 1 RR. hvy. melt.	28.00 to 28.50
Scrap rails, random lgth.	29.00 to 30.00
Rerolling rails	36.00 to 37.00
Rails 2 ft and under	34.00 to 35.00
Angles & splice bars	32.00 to 33.00
Std. steel axles	28.00 to 29.00
No. 1 cupola cast	34.00 to 35.00
Stove plate	28.00
Cast iron carwheels	23.00 to 24.00

St. Louis

No. 1 hvy. melting	$29.00 to $30.00
No. 2 hvy. melting	25.00 to 26.00
No. 2 bundled sheets	25.00 to 26.00
Machine shop turn.	19.00 to 20.00
Shoveling turnings	21.00 to 22.00
Rails, random lengths	35.00 to 36.00
Rails 3 ft and under	38.00 to 40.00
Locomotive tires, uncut	29.00 to 30.00
Angles and splice bars	37.00 to 38.00
Std. steel car axles	40.00 to 42.00
RR. spring steel	33.00 to 35.00
No. 1 machinery cast	37.00 to 38.00
Hvy. breakable cast.	31.00 to 32.00
Cast iron brake shoes	31.00 to 32.00
Stove plate	33.00 to 35.00
Cast iron car wheels	34.00 to 35.00
Malleable	30.00 to 32.00

New York

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$18.50 to $19.00
No. 2 hvy. melting	17.00 to 18.00
No. 2 bundles	15.00 to 16.00
Machine shop turn.	10.00 to 11.00
Mixed bor. and turn.	10.00 to 11.00
Shoveling turnings	11.00 to 12.00
Clean cast chem. bor.	22.00 to 23.00
No. 1 machinery cast.	30.00 to 32.00
Mixed yard cast.	29.00 to 30.00
Charging box cast.	26.00 to 27.00
Heavy breakable cast.	26.00 to 27.00
Unstrp. motor blocks	25.00 to 26.00

Boston

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$17.00 to 18.00
No. 2 hvy. melting	16.00 to 17.00
No. 1 bundles	17.00 to 18.00
No. 2 bundles	$14.50 to $15.00
Machine shop turn.	10.50 to 11.00
Mixed bor. and turn.	10.00 to 10.50
Shoveling turnings	12.00 to 12.50
No. 2 busheling	12.00 to 13.00
Clean cast chem. borings	17.00 to 18.00
No. 1 machinery cast.	32.00 to 34.00
No. 2 machinery cast.	28.00 to 29.00
Heavy breakable cast.	25.00 to 26.00
Stove plate	25.00 to 26.00

Detroit

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$21.00 to $22.00
No. 2 hvy. melting	19.00 to 20.00
No. 1 bundles	23.00 to 24.00
New busheling	23.00 to 24.00
Flashings	21.00 to 22.00
Machine shop turn.	15.00 to 16.00
Mixed bor. and turn.	15.00 to 16.00
Shoveling turnings	17.00 to 18.00
Cast iron borings	17.00 to 18.00
Low phos. plate	23.00 to 24.00
No. 1 cupola cast	35.00 to 36.00
Heavy breakable cast	29.00 to 30.00
Stove plate	28.00 to 29.00
Automotive cast	35.00 to 36.00

Cincinnati

Per gross ton, f.o.b. cars:

No. 1 hvy. melting	$27.50 to $28.00
No. 2 hvy. melting	23.50 to 24.00
No. 1 bundles	27.50 to 28.00
No. 2 bundles	21.50 to 22.00
Machine shop turn.	14.50 to 15.00
Mixed bor. and turn.	14.50 to 15.00
Shoveling turnings	17.50 to 18.00
Cast iron borings	17.50 to 18.00
Low phos. 18 in. under	35.00 to 36.00
Rails, random lengths	34.00 to 35.00
Rails, 18 in. and under	43.00 to 44.00
No. 1 cupola cast	40.00 to 41.00
Hvy. breakable cast	34.00 to 35.00
Drop broken cast	43.00 to 44.00

San Francisco

No. 1 hvy. melting	$20.00
No. 2 hvy. melting	18.00
No. 1 bundles	16.00
No. 2 bundles	16.00
No. 3 bundles	13.00
Machine shop turn	9.00
Elec. fur 1 ft and under	28.00
No. 1 RR. hvy. melting	17.00
Scrap rails, random lgth.	17.00
No. 1 cupola cast.	$30.00 to 35.00

Los Angeles

No. 1 hvy. melting	$20.00
No. 2 hvy. melting	18.00
No. 1 bundles	16.00
No. 2 bundles	16.00
No. 3 bundles	13.00
Mach. shop turn.	12.00
Elec. fur. 1 ft and under	30.00
No. 1 RR. hvy. melting	20.00
No. 1 cupola cast.	$36.00 to 40.00

Seattle

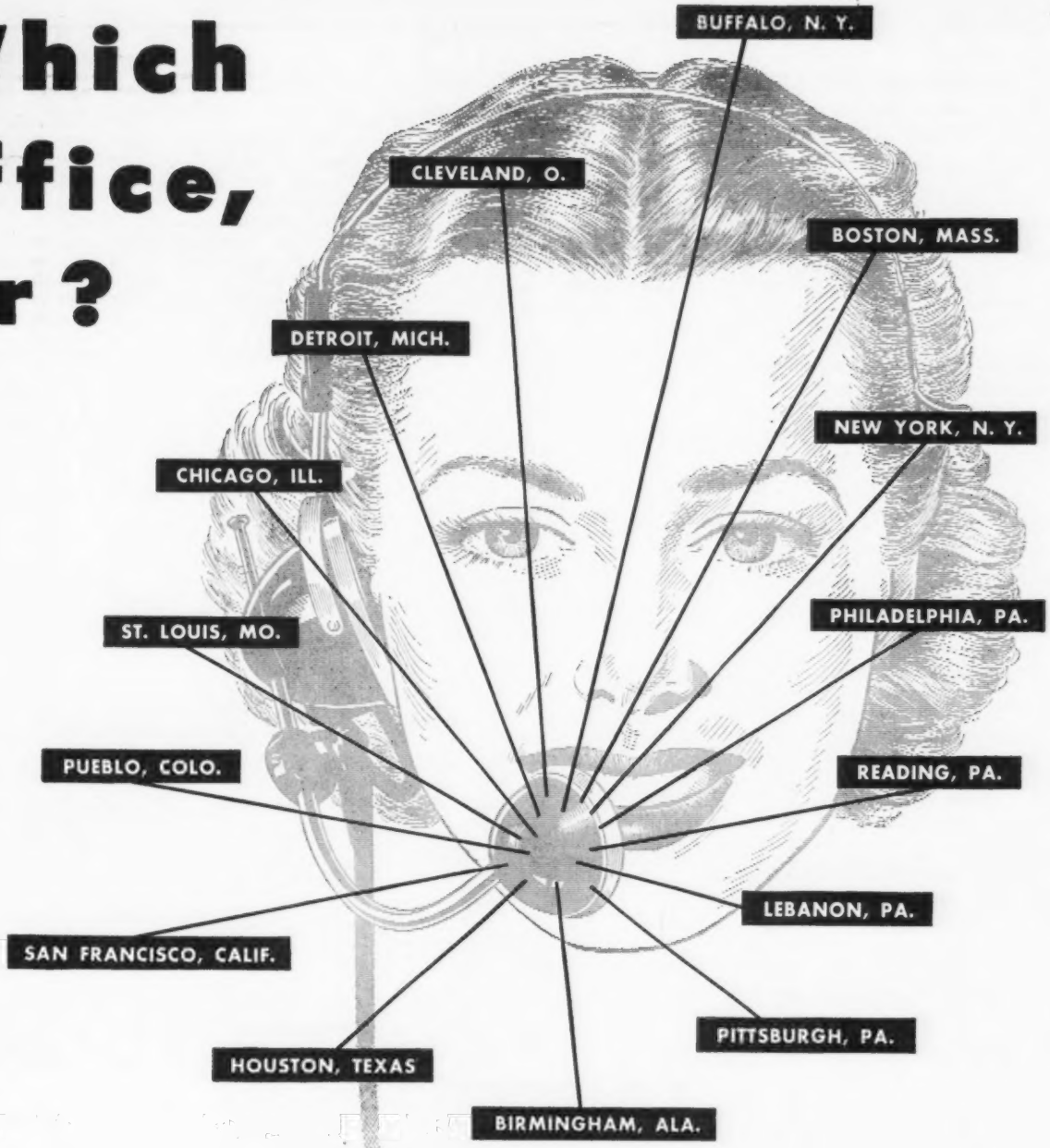
No. 1 hvy. melting	$16.00
No. 2 hvy. melting	16.00
No. 1 bundles	15.00
No. 2 bundles	15.00
No. 3 bundles	12.00
Elec. fur. 1 ft and under	27.50
RR. hvy. melting	19.00
No. 1 cupola cast	$27.00 to 30.00
Heavy breakable cast	20.00

Hamilton, Ont.

Cast grades f.o.b. shipping point:

No. 1 hvy. melting	$24.00
No. 1 bundles	24.00
No. 2 bundles	23.50
Mechanical bundles	22.00
Mixed steel scrap	20.00
Mixed bor. and turn.	18.00
Rails, remelting	24.00
Rails, rerolling	27.00
Bushelings	18.50
Bush., new fact, prep'd	22.00
Bush., new fact, unprep'd	17.00
Short steel turnings	18.00
Cast scrap	$40.00 to 43.00

Which office, sir?



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LEADERS IN IRON AND STEEL SCRAP SINCE 1889

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Comparison of Prices

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Flat-Rolled Steel: (cents per pound)	Nov. 1, 1949	Oct. 25, 1949	Oct. 4, 1949	Nov. 2, 1948
Hot-rolled sheets	3.25	3.25	3.25	3.26
Cold-rolled sheets	4.00	4.00	4.00	4.00
Galvanized sheets (10 ga)	4.40	4.40	4.40	4.40
Hot-rolled strip	3.25	3.25	3.25	3.265
Cold-rolled strip	4.038	4.038	4.038	4.063
Plates	3.40	3.40	3.40	3.42
Plates wrought iron	7.85	7.85	7.85	7.85
Stains C-R strip (No. 302)	33.00	33.00	33.00	33.25
Tin and Terneplate: (dollars per base box)				
Tinplate (1.50 lb) cokes	$7.75	$7.75	$7.75	$6.80
Tinplate, electro (0.50 lb)	6.70	6.70	6.70	6.00
Special coated mfg. ternes	6.65	6.65	6.65	5.90
Bars and Shapes: (cents per pound)				
Merchant bars	3.35	3.35	3.35	3.37
Cold-finished bars	3.995	3.995	3.995	3.995
Alloy bars	3.75	3.75	3.75	3.75
Structural shapes	3.25	3.25	3.25	3.25
Stainless bars (No. 302)	28.50	28.50	28.50	28.50
Wrought iron bars	9.50	9.50	9.50	9.50
Wire: (cents per pound)				
Bright wire	4.15	4.15	4.15	4.256
Rails: (dollars per 100 lb)				
Heavy rails	$3.20	$3.20	$3.20	$3.20
Light rails	3.55	3.55	3.55	3.55
Semifinished Steel: (dollars per net ton)				
Rerolling billets	$52.00	$52.00	$52.00	$52.00
Slabs, rerolling	52.00	52.00	52.00	52.00
Forging billets	61.00	61.00	61.00	61.00
Alloy blooms, billets, slabs	63.00	63.00	63.00	63.00
Wire rod and Skelp: (cents per pound)				
Wire rods	3.40	3.40	3.40	3.619
Skelp	3.25	3.25	3.25	3.25

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

Pig Iron: (per gross ton)	Nov. 1, 1949	Oct. 25, 1949	Oct. 4, 1949	Nov. 2, 1948
No. 2, foundry, Phila.	$50.42	$50.42	$50.42	$51.56
No. 2, Valley furnace	46.50	46.50	46.50	46.50
No. 2, Southern Cin'ti	46.08	46.08	46.08	49.47
No. 2, Birmingham	39.38	39.38	39.38	43.38
No. 2, foundry, Chicago†	46.50	46.50	46.50	46.50
Basic del'd Philadelphia	49.92	49.92	49.92	50.76
Basic, Valley furnace	46.00	46.00	46.00	46.00
Malleable, Chicago†	46.50	46.50	46.50	46.50
Malleable, Valley	46.50	46.50	46.50	46.50
Charcoal, Chicago	68.56	68.56	68.56	73.78
Ferromanganese‡	173.40	173.40	173.40	161.71

†The switching charge for delivery to foundries in the Chicago district is $1 per ton.
‡Average of U. S. prices quoted on Ferroalloy page.

Scrap: (per gross ton)				
Heavy melt'g steel, P'gh.	$29.75	$28.75	$29.75	$42.75
Heavy melt'g steel, Phila.	22.50	22.50	25.50	45.00
Heavy melt'g steel, Ch'go	30.50	25.50	25.50	41.75
No. 1 hy. comp. sh't Det.	23.50	19.50	22.50	38.00
Low phos. Young'n	29.75	29.75	31.75	47.75
No. 1, cast, Pittsburgh	39.50	39.50	39.50	70.00
No. 1, cast, Philadelphia	37.00	35.50	39.00	66.50
No. 1, cast, Chicago	42.00	42.00	40.50	71.00
Coke: Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.25	$14.25	$14.25	$15.00
Foundry coke, prompt	15.75	15.75	15.75	17.00
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electro, Conn.	17.625	17.625	17.625	23.50
Copper, Lake Conn.	17.75	17.75	17.75	23.625
Tin Straits, New York	*94.00*	95.00	96.00	$1.03
Zinc, East St. Louis	9.50	9.25	9.25	15.50
Lead, St. Louis	12.80	12.80	14.05	21.30
Aluminum, virgin	17.00	17.00	17.00	17.00
Nickel electrolytic	42.97	42.97	42.93	42.90
Magnesium, ingot	20.50	20.50	20.50	20.50
Antimony, Laredo, Tex.	32.00	32.00	38.50	35.00

Composite Prices

Starting with the issue of May 12, 1949, the weighted finished steel composite was revised for the years 1941 to date. The weights used are based on the average product shipments for the 7 years 1937 to 1940 inclusive and 1946 to 1948 inclusive. The use of quarterly figures has been eliminated because it was too sensitive. **(See p. 139 of May 12, 1949, issue.)**

	Finished Steel Base Price	Pig Iron	Scrap Steel
Nov. 1, 1949	3.705¢ per lb.	$45.88 per gross ton	$27.58 per gross ton
One week ago	3.705¢ per lb.	45.88 per gross ton	25.58 per gross ton
One month ago	3.705¢ per lb.	45.88 per gross ton	26.92 per gross ton
One year ago	3.720¢ per lb.	46.91 per gross ton	43.16 per gross ton

	Finished Steel High			Finished Steel Low			Pig Iron High			Pig Iron Low			Scrap Steel High			Scrap Steel Low		
1949	3.720¢	Jan.	1	3.705¢	May	3	$46.82	Jan.	4	$45.88	Sept.	6	$43.00	Jan.	1	$19.33	June	28
1948	3.721¢	July	27	3.193¢	Jan.	1	46.91	Oct.	12	39.58	Jan.	6	43.16	July	27	39.75	Mar.	9
1947	3.193¢	July	29	2.848¢	Jan.	1	37.98	Dec.	30	30.14	Jan.	7	42.58	Oct.	28	29.50	May	20
1946	2.848¢	Dec.	31	2.464¢	Jan.	1	30.14	Dec.	10	25.37	Jan.	1	31.17	Dec.	24	19.17	Jan.	1
1945	2.464¢	May	29	2.396¢	Jan.	1	25.37	Oct.	23	23.61	Jan.	2	19.17	Jan.	2	18.92	May	22
1944	2.396¢			2.396¢			$23.61			$23.61			19.17	Jan.	11	15.76	Oct.	24
1943	2.396¢			2.396¢			23.61			23.61			$19.17			$19.17		
1942	2.396¢			2.396¢			23.61			23.61			19.17			19.17		
1941	2.396¢			2.396¢			$23.61	Mar.	20	$23.45	Jan.	2	$22.00	Jan.	7	$19.17	Apr.	10
1940	2.30467¢	Jan.	2	2.24107¢	Apr.	16	23.45	Dec.	23	22.61	Jan.	2	21.83	Dec.	30	16.04	Apr.	9
1939	2.35367¢	Jan.	3	2.26689¢	May	16	22.61	Sept.	19	20.61	Sept.	12	22.50	Oct.	3	14.08	May	16
1938	2.58414¢	Jan.	4	2.27207¢	Oct.	18	23.25	June	21	19.61	July	6	15.00	Nov.	22	11.00	June	7
1937	2.58414¢	Mar.	9	2.32263¢	Jan.	4	23.25	Mar.	9	20.25	Feb.	16	21.92	Mar.	30	12.67	June	9
1936	2.32263¢	Dec.	28	2.05200¢	Mar.	10	19.74	Nov.	24	18.73	Aug.	11	17.75	Dec.	21	12.67	June	8
1935	2.07642¢	Oct.	1	2.06492¢	Jan.	8	18.84	Nov.	5	17.83	May	14	13.42	Dec.	10	10.33	Apr.	29
1934	2.15367¢	Apr.	24	1.95757¢	Jan.	2	17.90	May	1	16.90	Jan.	27	13.00	Mar.	13	9.50	Sept.	25
1933	1.95578¢	Oct.	3	1.75836¢	May	2	16.90	Dec.	5	13.56	Jan.	3	12.25	Aug.	8	6.75	Jan.	3
1932	1.89196¢	July	5	1.83901¢	Mar.	1	14.81	Jan.	5	13.56	Dec.	6	8.50	Jan.	12	6.43	July	5
1931	1.99626¢	Jan.	13	1.86586¢	Dec.	29	15.90	Jan.	6	14.79	Dec.	15	11.33	Jan.	6	8.50	Dec.	29
1929	2.31773¢	May	28	2.26498¢	Oct.	29	18.71	May	14	18.21	Dec.	17	17.58	Jan.	29	14.08	Dec.	8

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strip, representing major portion of finished steel shipments. Index recapitulated in Aug. 28, 1941, issue and in May 12, 1949.

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

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STEEL PRICES

Smaller numbers indicate producing companies. See key on facing page.

Base prices at producing points apply to the sizes and grades produced in these areas. Prices are in cents per lb unless otherwise noted. Extras apply.

	Pittsburgh, Weirton	Chicago	Gary	Cleveland	Birmingham	Buffalo	Youngstown	Sparrows Point	Granite City	Middletown	Warren	Detroit	Johnstown	Seattle, S. Fr'isco, Los Angeles	Fontana
INGOTS Carbon forging, net ton	$50.00 1											$50.00 31			
Alloy, net ton	$51.00 1.17							Houston $59.00[83]				$51.00 31			
BILLETS, BLOOMS, SLABS Carbon, rerolling, net ton	$52.00 1	$52.00 1	$52.00 1		$52.00 11	$52.00 3	$52.00 13	Conshohocken $57.00[26]					$52.00 3		$71.00 19
Carbon forging billets, net ton	$61.00 1	$61.00 1.4	$61.00 1.8	$61.00 4	$61.00 11	$61.00 3.4	Geneva $61.00[16] Houston $69.00[83] Conshohocken $63.00[26]				$61.00 25	$61.00 31	$61.00 3		$80.00 19
Alloy, net ton	$63.00 1.17	$63.00 1.4	$63.00 1	Conshohocken $65.00[26]		$63.00 3.4	$63.00 13	Bethlehem,[3] Canton,[4,42] Massillon[4] = $63.00			Houston $71.00[83]	$63.00 31	$63.00 3		$82.00 19
PIPE SKELP	3.25 1.5						3.25 1.4				3.25 4				
WIRE RODS	3.40 2.18	3.40 2.4.33	3.40 6	3.40 2	3.40 4.11		3.40 6	3.50 3	Portsmouth 3.40[20] Houston, 3.95[83]		Worcester 3.70[2]		3.40 3	4.05[24] S.F., L.A. 4.20[62] L.A.	
SHEETS Hot-rolled (18 ga. & hvr.)	3.25 1.5.9.15	3.25 23	3.25 1.6.8	3.25 4.5	3.25 4.11	3.25 3	3.25 1.6.13	3.25 3	Kokomo,[30] Ashland[7] = 3.25		3.25 4	3.45 12	Consh. 3.35[26]	3.95 24 L.A.	4.15 19
Cold-rolled	4.00[1.5] 7.9.15.63		4.00 1.6.8	4.00 4.5	4.00 11	4.00 3	4.00 6	4.00 3	4.20	4.00 7	4.00 4	4.20 12		4.95 24 S.F.	4.90 19
Galvanized (10 gage)	4.40 1.9.15		4.40 1.8		4.40 4.11		Niles 4.40[64]	4.40 3	Canton 4.40[4]		Ashland 4.40[7]			5.15 24 S.F., L.A.	
Enameling (12 gage)	4.40 1		4.40 1.8	4.40 4			4.40 6		4.60 22	4.40 7		4.70 12			
Long ternes (10 gage)	4.80 9.15		4.80 1							4.80 7					
Hi Str. Low Alloy, h.r.	4.95 1.5.9	4.95 1	4.95 1.6.8	4.95 4.5	4.95 11	4.95 3	4.95 1.6.13	4.95 3	Conshohocken 4.95[26]		4.95 4	5.15 12			
Hi Str. Low Alloy, c.r.	6.05 1.5		6.05 1.6.8	6.05 4.5		6.05 3	6.05 6.13	6.05 3			6.05 4	6.25 12			
Hi Str. Low Alloy, galv.	6.75 1			.75 4				6.75 3	Canton 6.75[4]						
STRIP Hot-rolled	3.25 5.7.9.25	3.25 23.66	3.25 1.6.8	3.25 5	3.25 11	3.25 3	3.25 1.6.13	3.25 3	Ashland 3.25[7]	Houston 3.65[83]	3.25 4	3.45 12.47	Atlanta 3.40[65]	4.00[62] S.F., L.A.	4.40 19
Cold-rolled	4.00 5.7.9.63	4.15 66	4.00 8	4.00 2.5		4.00 3	4.00 6.13. 40.48	4.00 3	New Haven 4.50[2,68]	4.00 7	4.00[4,49] 4.25[49]	4.20 12.47 4.25[68.81]		4.25[62] S.	4.90 19
Hi Str. Low Alloy, h.r.	4.95 5		4.95 1.6.8	4.95 5	4.95 11	4.95 3	4.95 1.6.13	4.95 3			4.95 4	5.15 12			
Hi Str. Low Alloy, c.r.	6.05 5.9			6.05 2.5		6.05 3	6.05 6.13	6.05			6.05 4	6.25 12			6.95 19
TINPLATE† Cokes, 1.50 lb. base box	$7.75 1.5.9.15		$7.75 1.6.8		$7.85 11			$7.85 3	$7.95 23		$7.75 4			$8.50 24 S.F.	
Electrolytic 0.25, 0.50, 0.75 lb. box	Deduct $1.30, $1.05 and 75¢ respectively from 1.50 lb. coke base box price														
BLACKPLATE, 29 ga. Hollowware enameling	5.30 1.5.15		5.30 1.6.8					5.40 3	5.50 22		5.30 4				
BARS Carbon Steel	3.35 1.5.9.17	3.35 1.4.23	3.35 1.6.8	3.35 4	3.35 4.11	3.35 3.4	3.35 1.4.6	3.35 3	Atlanta 3.50[65]	Canton 3.35[4]	Houston 3.75[83]	3.55 12	3.35 3	4.05[62] L.A. 4.05[24] S.F., L.A.	4.00 19
Reinforcing††	3.35 1.5	3.35 4	3.35 1.6.8	3.35 4	3.35 4.11	3.35 3.4	3.35 1.4.6	3.35 3	Atlanta 3.50[65]	Canton 3.35[4]	Houston 3.75[83]		3.35 3	4.10[62] S., S.F.	4.00 19
Cold-finished	3.95[5] 4.00[2,4] 17.52.69.71	4.00 2.23.69. 70	4.00 4.73.74	4.00 2.61		4.00 70	4.00 6.40.57		Putnam, Newark = 4.40[69] Cumberland = 3.95[72] Massillon,[52] Canton[4] = 4.00			4.30 12			
Alloy, hot-rolled	3.75 1.17	3.75 1.4.23	3.75 1.6.8			3.75 3.4	3.75 1.6	Bethlehem,[3] Canton,[4,42] Massillon[4] = 3.75			3.75 25	4.05 12	3.75 3	4.80 62 L.A.	4.75 19
Alloy cold-drawn	4.65 2.17.52.69.71	4.65 2.23. 69.70	4.65 4.73.74	4.65 2.61		4.65 3.70	4.65 6.57	Bethlehem,[3] Massillon 4.52 = 4.65			4.65 25	Canton = 4.65[4,42] Newark,[59] Worcester[2] = 4.95			
Hi Str. Low Alloy, h.r.	5.10 1.5		5.10 1.6.8	5.10 4	5.10 11	5.10 3	5.10 1.6	Bethlehem = 5.10[3]				5.30 12	5.10 3		
PLATE Carbon steel	3.40 1.5	3.40 1	3.40 1.6.8	3.40 4	3.40[4,11] Houston = 3.80[83] Conshohocken = 3.50[26]	3.40[31]	3.40[3]	3.40[3] Geneva = 3.40[16]	Coatesville = 3.50[21] Claymont = 3.50[29] Harrisburg = 3.75[35]			3.65 12	3.40 3	4.30 62 S.	4.00 19
Floor plates	4.55 1	4.55 1	4.55 5	4.55 5				Conshohocken,[26] Harrisburg[35] = 4.55							
Alloy	4.40 1	4.40 1	4.40 1	Conshohocken = 4.40[26]			4.40 13	4.40 3	Coatesville = 4.50[21]				4.40 3		
Hi Str. Low Alloy	5.20 1.5	5.20 1	5.20 1.8	5.20 4.5	5.20 11		5.20 6	5.20 3	Conshohocken = 5.20[26] Geneva = 5.20[16]			5.45 12	5.20 3		
SHAPES, Structural	3.25 1.5.9	3.25 1.23	3.25 1.6.8		3.25 11	3.30 3	Bethlehem = 3.30,[3] Geneva = 3.25[16] Minnequa, Colo. = 3.75[14], Houston = 3.65[83]						3.30 3	3.80[62] S.F. 3.85[62] L.A.	3.80 19
Hi Str. Low Alloy	4.95 1.5	4.95 1	4.95 1.6.8		4.95 11	5.05 3	4.95 6		Bethlehem = 5.05[3]				5.05 3	3.90[62] S. 3.95[24] L.A.	
MANUFACTURERS' WIRE Bright	4.15 2.5.18	4.15[4,33] 2.34		4.15 2.77	4.15 4.11	Portsmouth 4.15[20]	4.15 6	4.25 3		Duluth = 4.15[2] Worcester = 4.45[2] Pueblo = 4.50[14]			4.15 3	5.10[24] S.F. 5.10[62] L.A. 5.10[24] L.A.	
PILING, Steel sheet	4.05 1.9	4.05 1				4.05 3									

STAINLESS STEELS

Base prices, in cents per pound, f.o.b. producing point

Product	301	302	303	304	316	321	347	410	416	430
Ingots, rerolling	12.75	13.50	15.00	14.50	22.75	18.25	20.00	11.25	13.75	11.50
Slabs, billets, rerolling	17.00	18.25	20.25	19.25	30.25	24.50	26.75	15.00	18.50	15.25
Forg. discs, die blocks, rings	30.50	30.50	33.00	32.00	49.00	38.50	41.00	24.50	25.00	25.00
Billets, forging	24.25	24.25	26.25	25.50	39.00	29.00	32.75	19.50	20.00	20.00
Bars, wire, structurals	28.50	28.50	31.00	30.00	46.00	34.00	38.50	23.00	23.50	23.50
Plates	32.00	32.00	34.00	34.00	50.50	39.50	44.00	26.00	26.50 27.00	26.50
Sheets	37.50	37.50	39.50	39.50	53.00	45.50	50.00	33.00	33.50	35.50
Strip, hot-rolled	24.25	25.75	30.00	27.75	46.00	34.50	38.75	21.25	28.00	21.75
Strip, cold-rolled	30.50	33.00	36.50	35.00	55.00	44.50	48.50	27.00	33.50	27.50

Numbers correspond to producers. See Key below.

STAINLESS STEEL PRODUCING POINTS—*Sheets:* Midland, Pa., 17; Brackenridge, Pa., 28; Butler, Pa., 7; McKeesport, Pa., 1; Washington, Pa., 38, 39; Baltimore, 37; Middletown, Ohio, 7; Massillon, Ohio, 4; Gary, 1; Bridgeville, Pa., 59; New Castle, Ind., 55; Lockport, N. Y., 46.

Strip: Midland, Pa., 17; Cleveland, 2; Carnegie, Pa., 41; McKeesport, Pa., 54; Reading, Pa., 36; Washington, Pa., 38; W. Leechburg, Pa., 28; Bridgeville, Pa., 59; Detroit, 47; Massillon, Canton, Ohio, 4; Middletown, Ohio, 7; Harrison, N. J., 49; Youngstown, 48; Lockport, N. Y., 46; New Britain, Conn., 58; Sharon, 13; Butler, Pa., 7.

Bars: Baltimore, 7; Duquesne, Pa., 1; Munhall, Pa., 1; Reading, Pa., 36; Titusville, Pa., 59; Washington, Pa., 39; McKeesport Pa., 1, 54; Bridgeville, Pa., 59; Dunkirk, N. Y., 28; Massillon, Ohio, 4; Chicago, 1, 67; Syracuse, N. Y., 17; Watervliet, N. Y., 28; Waukegan, Ill. 2; Lockport, N. Y., 46; Canton, Ohio, 42.

Wire: Waukegan, Ill., 2; Massillon, Ohio, 4; McKeesport, Pa., 54; Bridgeport, Conn., 44; Chicago, 67; Trenton, N. J., 45; Harrison, N. J., 80; Baltimore, 7; Dunkirk, 28.

Structurals: Baltimore, 7; Massillon, Ohio, 4; Chicago, 1, 67; Watervliet, N. Y., 28; Bridgeport, Conn., 44.

Plates: Brackenridge, Pa., 28; Butler, Pa., 7; Chicago, 1; Munhall, Pa., 1; Midland, Pa., 17; New Castle, Ind., 55; Lockport, N. Y., 46; Middletown, 7; Washington, Pa., 39; Cleveland, Massillon, 4.

Forged discs, die blocks and rings: Pittsburgh, 1, 17; Syracuse, 17; Ferndale, Mich., 28.

Forging billets: Midland, Pa, 17; Baltimore, 7; Washington, Pa., 39; Mckeesport, 54; Massillon, Canton, Ohio, 4; Watervliet, 28; Pittsburgh, Chicago 1.

KEY TO STEEL PRODUCERS

With Home Offices

1 Carnegie-Illinois Steel Corp., Pittsburgh
2 American Steel & Wire Co., Cleveland
3 Bethlehem Steel Co., Bethlehem
4 Republic Steel Corp., Cleveland
5 Jones & Laughlin Steel Corp., Pittsburgh
6 Youngstown Sheet & Tube Co., Youngstown
7 Armco Steel Corp., Middletown, Ohio
8 Inland Steel Co., Chicago
9 Weirton Steel Co., Weirton, W. Va.
10 National Tube Co., Pittsburgh
11 Tennessee Coal, Iron & R.R. Co., Birmingham
12 Great Lakes Steel Corp., Detroit
13 Sharon Steel Corp., Sharon, Pa.
14 Colorado Fuel & Iron Corp., Denver
15 Wheeling Steel Corp., Wheeling, W. Va.
16 Geneva Steel Co., Salt Lake City
17 Crucible Steel Co. of America, New York
18 Pittsburgh Steel Co., Pittsburgh
19 Kaiser Co., Inc., Oakland, Calif.
20 Portsmouth Steel Corp., Portsmouth, Ohio
21 Lukens Steel Co., Coatesville, Pa.
22 Granite City Steel Co., Granite City, Ill.
23 Wisconsin Steel Co., South Chicago, Ill.
24 Columbia Steel Co., San Francisco
25 Copperweld Steel Co., Glassport, Pa.
26 Alan Wood Steel Co., Conshohocken, Pa.
27 Midvale Co., Philadelphia
28 Allegheny Ludlum Steel Corp., Pittsburgh
29 Worth Steel Co., Claymont, Del.
30 Continental Steel Corp., Kokomo, Ind.
31 Rotary Electric Steel Co., Detroit
32 Laclede Steel Co., St. Louis
33 Northwestern Steel & Wire Co., Sterling, Ill.
34 Keystone Steel & Wire Co., Peoria, Ill.
35 Central Iron & Steel Co., Harrisburg, Pa.
36 Carpenter Steel Co., Reading, Pa.
37 Eastern Stainless Steel Corp., Baltimore
38 Washington Steel Corp., Washington, Pa.
39 Jessop Steel Co., Washington, Pa.
40 Blair Strip Steel Co., New Castle, Pa.
41 Superior Steel Corp., Carnegie, Pa.
42 Timken Steel & Tube Div., Canton, Ohio
43 Babcock & Wilcox Tube Co., Beaver Falls, Pa.
44 American Chain & Cable Co., Inc., New York
45 John A. Roebling's Sons Co., Trenton, N. J.
46 Simonds Saw & Steel Co., Fitchburg, Mass.
47 McLouth Steel Corp., Detroit
48 Cold Metal Products Co., Youngstown
49 Thomas Steel Co., Warren, Ohio
50 Wilson Steel & Wire Co., Chicago
51 Sweet's Steel Co., Williamsport, Pa.
52 Superior Drawn Steel Co., Monaca, Pa.
53 A. M. Byers Co., Pittsburgh
54 Firth Sterling Steel & Carbide Corp., McKeesport, Pa.
55 Ingersoll Steel Div., Chicago
56 Latrobe Electric Steel Co., Latrobe, Pa.
57 Fitzsimons Steel Co., Youngstown
58 Stanley Works, New Britain, Conn.
59 Universal-Cyclops Steel Corp., Bridgeville, Pa.
60 Vanadium-Alloys Steel Co., Latrobe, Pa.
61 Cuyahoga Steel & Wire Co., Cleveland
62 Bethlehem Pacific Coast Steel Corp., San Francisco
63 Follansbee Steel Corp., Pittsburgh
64 Niles Rolling Mill Co., Niles, Ohio
65 Atlantic Steel Co., Atlanta
66 Acme Steel Co., Chicago
67 Joslyn Mfg. & Supply Co., Chicago
68 Detroit Steel Corp., Detroit
69 Wyckoff Steel Co., Pittsburgh
70 Bliss & Laughlin, Inc., Harvey, Ill.
71 Columbia Steel & Shafting Co., Pittsburgh
72 Cumberland Steel Co., Cumberland, Md.
73 La Salle Steel Co., Chicago
74 Monarch Steel Co., Inc., Indianapolis
75 Empire Steel Co., Mansfield, Ohio
76 Mahoning Valley Steel Co., Niles, Ohio
77 Oliver Iron & Steel Co., Pittsburgh
78 Pittsburgh Screw & Bolt Co., Pittsburgh
79 Standard Forgings Corp., Chicago
80 Driver Harris Co., Harrison, N. J.
81 Detroit Tube & Steel Div., Detroit
82 Reliance Div., Eaton Mfg. Co., Massillon, Ohio
83 Sheffield Steel Corp., Kansas City

Notes to Steel Price Table:

†Special coated mfg ternes, deduct $1.10 from 1.50-lb coke base box price. Can-making quality blackplate, 55 to 128-lb, deduct $2.00 from 1.50-lb coke base box.

‡Straight lengths only from producer to fabricator.

PIPE AND TUBING

Base discounts, f.o.b. mills
Base price, about $200.00 per net ton

Standard, Threaded and Coupled

Steel, buttweld*	Black	Galv
½-in.	43 to 41	26½ to 24½
¾-in.	46 to 44	30½ to 28½
1-in.	48½ to 46½	33½ to 31½
1¼-in.	49 to 47	34 to 32
1½-in.	49½ to 47½	34½ to 32½
2-in.	50 to 48	35 to 33
2½ to 3-in.	50½ to 48½	35½ to 33½

Steel, lapweld		
2-in.	39½	26 to 24
2½ to 3-in.	43½ to 42½	28 to 27
3½ to 6-in.	46½ to 42½	31 to 27

Steel, seamless		
2-in.	38½	23
2½ to 3-in.	41½	26
3½ to 6-in.	43½	28

Wrought iron, buttweld		
½-in.	+20½	+47
¾-in.	+10½	+36
1 & 1¼ in.	+ 4½	+27
2-in.	— 1½	+23½
3-in.	— 2	+23

Wrought iron, lapweld		
2-in.	+ 7½	+31
2½ to 3½-in.	+ 5	+26½
4-in.	list	+20½
4½ to 8-in.	+ 2	+22

Extra Strong, Plain Ends

Steel, buttweld		
½-in.	42 to 40	27 to 25
¾-in.	46 to 44	31 to 29
1-in.	48 to 46	34 to 32
1¼-in.	48½ to 46½	34½ to 32½
1½-in.	49 to 47	35 to 33
2-in.	49½ to 47½	35½ to 34½
2½ to 3-in.	50 to 48	36 to 34

Steel, lapweld		
2-in.	39½ to 38½	25 to 24
2½ to 3-in.	44½ to 42½	30 to 28
3½ to 6-in.	48 to 44	33½ to 31½

Steel, seamless		
2-in.	37½	23
2½ to 3-in.	41½	27
3½ to 6-in.	45	30½

Wrought Iron, buttweld		
½-in.	+16	+40
¾-in.	+ 9½	+34
1 to 2-in.	— 1½	+23

Wrought Iron, lapweld		
2-in.	+ 4½	+27½
2½ to 4-in.	— 5	+16
4½ to 6-in.	— 1	+20½

For threads only, buttweld, lapweld and seamless pipe, one point higher discount (lower price) applies. For plain ends, buttweld, lapweld and seamless pipe 3-in. and smaller, three points higher discount (lower price) applies, while for lapweld and seamless 3½-in. and larger four points higher discount (lower price) applies. On buttweld and lapweld steel pipe, jobbers are granted a discount of 5 pct. *Fontana, Calif., deduct 11 points from figures in left columns.

BOILER TUBES

Seamless steel and electric welded commercial boiler tubes and locomotive tubes, minimum wall. Prices per 100 ft at mill in carload lots, cut length 4 to 24 ft inclusive.

OD in.	Gage BWG	Seamless H.R.	Seamless C.R.	Electric Weld H.R.	Electric Weld C.D.
2	13	$19.18	$22.56	$18.60	$21.89
2½	12	25.79	30.33	25.02	29.41
3	12	28.68	33.76	27.82	32.74
3½	11	35.85	42.20	34.78	40.94
4	10	44.51	52.35	43.17	50.78

CAST IRON WATER PIPE

	Per net ton
6 to 24-in., del'd Chicago	$95.70
6 to 24-in., del'd N. Y.	$92.50 to 97.40
6 to 24-in., Birmingham	82.50
6-in. and larger, f.o.b. cars, San Francisco, Los Angeles, for all rail shipment; rail and water shipment less	109.30

Class "A" and gas pipe, $5 extra; 4-in. pipe is $5 a ton above 6-in.

UNIVERSITY OF MICHIGAN LIBRARIES

MERCHANT WIRE PRODUCTS

To the dealer, f.o.b. mill

	Base Column	Pittsburg, Calif.
Standard & coated nails*	103	122
Woven wire fence†	109	132
Fence posts, carloads††	112	...
Single loop bale ties	106	130
Galvanized barbed wire**	123	143
Twisted barbless wire	123	...

* Pgh., Chi., Duluth; Worcester, 6 columns higher; Houston, 8 columns higher; Kansas City, 12 Columns higher. † 15½ gage and heavier. ** On 80 rod spools, in carloads. †† Duluth, Joliet and Johnstown.

	Base per 100 lb	Pittsburg, Calif.
Annealed fence wire‡	$4.80	$5.75
Annealed, galv. fencing‡	5.25	6.20
Cut nails, carloads‡‡	6.75	...

‡ Add 30¢ at Worcester; 10¢ at Sparrows Pt.

‡‡ Less 20¢ to jobbers.

PRODUCING POINTS — *Standard, coated or galvanized nails, woven wire fence, bale ties, and barbed wire:* Alabama City, Ala., 4; Atlanta, 65; Aliquippa, Pa. (except bale ties), 5; Bartonville, Ill. (except bale ties), 34; Chicago, 4; Donora, Pa., 2; Duluth, 2; Fairfield, Ala., 11; Johnstown, Pa. (except bale ties), 3; Joliet, Ill., 2; Kokomo, Ind., 30; Minnequa, Colo., 14; Monessen, Pa. (except bale ties), 18; Pittsburg, Calif., 24; Portsmouth, Ohio, 20; Rankin, Pa. (except bale ties), 2; Sparrows Point (except woven fence), 3; Sterling, Ill., 33; San Francisco (except nails and woven fence), 14; Torrance, Calif. (nails only), 24; Worcester (nails only), 2; Houston (except bale ties), 83; Kansas City (except bale ties), 83.

Fence posts: Duluth, 2; Johnstown, Pa., 3; Joliet, Ill., 2; Minnequa, Colo., 14; Moline, Ill., 4; Williamsport, Pa., 51.

Cut nails: Wheeling, W. Va., 15; Conshohocken, Pa., 26.

CLAD STEEL

Base prices, cents per pound, f.o.b. mill

	Plate	Sheet
Stainless-carbon		
No. 304, 20 pct,		
Coatesville, Pa. (21)	*26.50	
Washgtn, Pa. (39)	*26.50	
Claymont, Del. (29)	*26.50	
Conshohocken, Pa. (26)		*22.50
New Castle, Ind. (55)	*26.50	*24.00
Nickel-carbon		
10 pct, Coatesville, (26)	27.50	
Inconel-carbon		
10 pct, Coatesville, (21)	36.00	
Monel-carbon		
10 pct, Coatesville, (21)	29.00	
No. 302 Stainless-copper-stainless, Carnegie, Pa. (41)		75.00
Aluminized steel sheets, hot dip, Butler, Pa., (7)		7.75

* Includes annealing and pickling, or sandblasting.

ELECTRICAL SHEETS

24 gage, HR cut lengths, f.o.b. mill

	Cents per lb
Armature	5.45
Electrical	5.95
Motor	6.70
Dynamo	7.50
Transformer 72	8.05
Transformer 65	8.60
Transformer 58	9.30
Transformer 52	10.10

PRODUCING POINTS—Beech Bottom, W. Va., 18; Brackenridge, Pa., 28; Follansbee, W. Va., 63; Granite City, Ill., 22; Indiana Harbor, Ind., 8; Mansfield, Ohio, 75; Niles, Ohio, 64, 76; Toronto, Ohio, 63; Vandergrift, Pa. 1; Warren, Ohio, 4; Zanesville, Ohio, 7.

Numbers after producing points correspond to steel producers. See key on previous page.

BOLTS, NUTS, RIVETS, SET SCREWS

Consumer Prices

(Bolts and nuts f.o.b. mill Pittsburgh, Cleveland, Birmingham or Chicago)

Base discount less case lots

Machine and Carriage Bolts

	Pct Off List
½ in. & smaller x 6 in. & shorter	35
9/16 & ⅝ in. x 6 in. & shorter	37
¾ in. & larger x 6 in. shorter	34
All diam., longer than 6 in.	30
Lag, all diam over 6 in. & longer	35
Lag, all diam x 6 in. & shorter	37
Plow bolts	47

Nuts, Cold Punched or Hot Pressed

(Hexagon or Square)

½ in. and smaller	35
9/16 to 1 in. inclusive	34
1⅛ to 1½ in. inclusive	32
1⅝ in. and larger	27

On above bolts and nuts, excepting plow bolts, additional allowances of 15 pct for full container quantities. There is an additional 5 pct allowance for carload shipments.

Semifinished Hexagon Nuts

	USS	SAE
7/16 in. and smaller	..	41
½ in. and smaller	38	..
½ in. through 1 in.	..	39
9/16 in. through 1 in.	37	
1⅛ in. through 1½ in.	35	37
1⅝ in. and larger	28	..

In full case lots, 15 pct additional discount.

Stove Bolts

Packages, nuts separate	$61.75
In bulk	70.00

Large Rivets

(½ in. and larger)

	Base per 100 lb
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	$6.75
F.o.b. Lebanon, Pa.	6.75

Small Rivets

(7/16 in. and smaller)

	Pct off List
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	48

Cap and Set Screws

(In packages)	Pct Off List
Hexagon head cap screws, coarse or fine thread, up to and incl. 1 in. x 6 in., SAE 1020, bright	46
¾ to 1 in. x 6 in., SAE (1035), heat treated	35
Milled studs	19
Flat head cap screws, listed sizes	5
Fillister head cap, listed sizes	28

C-R SPRING STEEL

Base per pound f.o.b. mill

0.26 to 0.40 carbon	4.00¢
0.41 to 0.60 carbon	5.50¢
0.61 to 0.80 carbon	6.10¢
0.81 to 1.05 carbon	8.05¢
1.06 to 1.35 carbon	10.35¢

Worcester, add 0.30¢.

RAILS, TRACK SUPPLIES

F.o.b. mill

Standard rails, 100 lb and heavier, No. 1 quality, per 100 lb	$3.20
Joint bars, per 100 lb	4.25
Light rails per 100 lb	3.55

	Base Price cents per lb
Track spikes	5.35
Axles	5.20
Screw spikes	8.00
Tie plates	4.05
Tie plates, Pittsburgh, Torr., Calif.*	4.20
Track bolts, untreated	8.25
Track bolts, heat treated, to railroads	8.50

*Seattle, add 30¢.

PRODUCING POINTS—*Standard rails:* Bessemer, Pa., 1; Ensley, Ala., 11; Gary, 1; Indiana Harbor, Ind., 8; Lackawanna, N. Y., 3; Minnequa, Colo., 14; Steelton, Pa., 3.

Light rails: All the above except Indiana Harbor and Steelton, plus Fairfield, Ala., 11; Johnstown, Pa. 3; Minnequa, Colo., 14.

Joint bars: Bessemer, Pa., 1; Fairfield, Ala., 11; Indiana Harbor, Ind., 8; Joliet, Ill., 1; Lackawanna, N. Y., 3; Steelton, Pa., 3; Minnequa, Colo., 14.

Track spikes: Fairfield, Ala., 11; Indiana Harbor, Ind., 6, 8; Lebanon, Pa., 3; Minnequa, Colo., 14; Pittsburgh, 5; Chicago, 4; Struthers, Ohio, 6; Youngstown, 4.

Track bolts: Fairfield, Ala., 11; Lebanon, Pa., 3; Minnequa, Colo., 14; Pittsburgh, 77, 78.

Axles: Fairfield, Ala., 11; Gary, 1; Indiana Harbor, Ind., 79; Johnstown, Pa., 3; McKees Rocks, Pa., 1.

Tie plates: Fairfield, Ala., 11; Gary, 1; Indiana Harbor, Ind., 8; Lackawanna, N. Y., 3; Pittsburg, Calif., 24; Pittsburgh, 4; Seattle, 62; Steelton, Pa., 3; Torrance, Calif., 24; Minnequa, Colo., 14.

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	90.5¢
18	4	1	—	5	$1.42
18	4	2	—	—	$1.025
1.5	4	1.5	8	—	65¢
6	4	2	6	—	69.5¢
High-carbon-chromium					52¢
Oil hardened manganese					29¢
Special carbon					26.5¢
Extra carbon					22¢
Regular carbon					19¢

Warehouse prices on and east of Mississippi are 2½¢ per lb higher. West of Mississippi, 4½¢ higher.

COKE

	Net Ton
Furnace, beehive (f.o.b. oven) Connellsville, Pa.	$14.00 to $14.50
Foundry, beehive (f.o.b. oven) Connellsville, Pa.	$15.50 to $16.00
Foundry, oven coke	
Buffalo, del'd	$20.90
Chicago, f.o.b.	20.40
Detroit, f.o.b.	19.40
New England, del'd	22.70
Seaboard, N. J., f.o.b.	22.00
Philadelphia, f.o.b.	20.45
Swedeland, Pa., f.o.b.	20.40
Plainesville, Ohio, f.o.b.	20.90
Erie, del'd	$20.25 to 21.04
Cleveland, del'd	22.62
Cincinnati, del'd	21.71
St. Paul, f.o.b.	23.50
St. Louis, del'd.	21.60
Birmingham, del'd	18.75

FLUORSPAR

Washed gravel fluorspar, f.o.b. cars, Rosiclare, Ill. Base price, per ton net: Effective CaF, content:

70% or more	$37.00
60% or less	34.00

WAREHOUSE PRICES

Base prices, f.o.b. warehouse, dollars per 100 lb. (Metropolitan area delivery, add 15c to base price except Cincinnati and New Orleans (*), add 10c; New York, Chicago and Boston, add 20c.)

CITIES	SHEETS			STRIP		PLATES	SHAPES	BARS		ALLOY BARS			
	Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled		Standard Structural	Hot-Rolled	Cold-Finished	Hot-Rolled, A 4615 As-rolled	Hot-Rolled, A 4140-50 Ann.	Cold-Drawn, A 4615 As-rolled	Cold-Drawn, A 4140-50 Ann.
Baltimore	5.31	6.21-6.41	6.95-7.11	5.37	....	5.56	5.36	5.42	6.16	....	9.60-10.10	....	....
Birmingham	4.85	5.75	6.15	4.85	....	5.10	4.90	4.90	6.59	....	....	....	....
Boston	5.55	6.45-6.75	7.11-7.61	5.60	6.75	5.75	5.42	5.52	6.02	9.36-9.67	9.67-9.87	10.72	11.02
Buffalo	4.85	5.75	7.42-7.57	5.24	7.27	5.35	5.00	4.95	5.40	9.36	9.60	10.65	10.95
Chicago	4.85	5.75	6.85	4.85	5.45-6.15	5.10	4.90	4.90	5.40	8.90	9.20	10.25	10.55
Cincinnati*	5.16-5.51	5.84-6.28	6.59-6.93	5.28-5.43	....	5.53-5.85	5.33	5.33-5.48	6.08-6.20	9.74	9.99	11.19	11.44
Cleveland	4.85	5.75	6.70	5.03	....	5.21	5.01	5.01	5.45	9.05	9.35	10.40	10.70
Detroit	5.28-5.32	6.07-6.18	7.38-7.58	5.27-5.47	6.27-6.58	5.52-5.57	5.33-5.40	5.33-5.55	6.00-6.10	9.67	9.92	11.11	11.35
Houston	6.70-6.95	....	7.30	6.70	....	6.70	6.20-6.70	6.40-6.65	7.60	10.45	10.40	11.45	11.70
Indianapolis	5.29	6.13	7.44	5.29	7.38	5.54	5.34	5.34	6.14	11.25	11.39	....	....
Kansas City	5.50	6.40	7.50	5.50	6.95[5]	5.75	5.55	5.55	6.10	9.55	9.85	10.90	11.20
Los Angeles	5.45	7.00	7.45	5.95	7.35[20]	5.50	5.45	5.60	7.25	....	....	....	....
Memphis	5.75-5.80	6.80	7.20	5.80-5.95	6.80	5.95-6.00	5.75	5.75	6.53	....	....	....	....
Milwaukee	5.03	5.93	7.02	5.03-5.38	6.32	5.28	5.08	5.08	5.63	9.08	9.38	10.43	10.73
New Orleans*	5.95	6.75	....	6.15	....	6.15	5.95	5.95	6.65[6]	....	....	....	....
New York	5.40	6.31	6.85-6.90	5.62	6.76	5.65	5.33	5.57	6.31	9.28	9.58	10.63	10.93
Norfolk	6.00	....	....	6.20	....	6.05	6.05	6.05	7.05	....	....	....	....
Omaha	6.13	....	8.33	6.13	....	6.38	6.18	6.18	6.98	....	....	....	....
Philadelphia	4.95	6.24[13]	6.63	5.40	6.29	5.35	5.10	5.40	5.98	9.05	9.35	10.62	10.87
Pittsburgh	4.85	5.75	6.90	5.00	6.00	5.05	4.90	4.90	5.40	8.90	9.20	10.25	10.55
Portland	6.50[8]-7.05	8.00	8.80-9.10	6.85[3]	....	6.30[3]	6.35[3]	6.35[3]	8.25[14]	10.50[8]	10.10[8]	....	....
Salt Lake City	7.05	7.05	8.65-8.65	7.45[3]	....	5.65[3]	5.50[3]	7.10[3]	8.15	....	....	....	....
San Francisco	6.15[3]	7.50[2]	7.80	6.75[3]	8.25[3]	6.35[3]	5.90[3]	5.90[3]	7.55	9.80	10.00	11.20	11.60
Seattle	6.70[4]-7.10	8.15[2]-8.65	8.80-9.30	6.70[4]	....	6.35[4]	6.30[4]	6.20[4]	8.15[14]	....	10.35[15]	....	13.10[15]
St. Louis	5.22-5.37	6.12-6.27	7.32	5.22	6.68-7.54	5.47	5.27	5.27	5.82	9.27-9.72	9.57-9.97	10.62-11.17	10.92-11.42
St. Paul	5.44	6.19-6.34	7.54-7.64	5.44	6.82	5.64-6.69	5.49	5.49	6.04	9.49	9.79	10.84	11.14

BASE QUANTITIES *Standard unless otherwise keyed on prices.*

Hot-Rolled:
Sheets, strip, plates, shapes and bars, 400 to 1999 lb.

Cold-Rolled:
Sheets, 400 to 1499 lb strip, extras on all quantities. Bars 1000 lb and over.

Alloy Bars:
1000 to 1999 lb.

Galvanized Sheets:
450 to 1499 lb.

Exceptions:
(1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 300 to 4999 lb; (4) 300 to 9999 lb; (5) 2000 lb and over; (6) 1000 lb and over; (7) 400 to 14,999 lb; (8) 400 lb and over; (9) 500 to 1999 lb; (10) 500 to 999 lb; (11) 400 to 3999 lb; (12) 450 to 3749 lb; (13) 400 to 1999 lb; (14) 1500 lb and over; (15) 1000 to 4999 lb; (16) 4000 lb and over; (17) up to 1999 lb; (18) 1000 to 1499 lb; (19) 1500 to 3499 lb; (20) 6000 lb and over.

PIG IRON PRICES

Dollars per gross ton. Delivered prices do not include 3 pct tax on freight.

PRODUCING POINT PRICES

Producing Point	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Bethlehem	48.00	48.50	49.00	49.50	.....
Birmingham	38.88	39.38	.....	.....	.....
Buffalo	46.00	46.50	47.00	.....	.....
Chicago	46.00	46.50	46.50	47.00	.....
Cleveland	46.00	46.50	46.50	47.00	51.00
Duluth	46.00	46.50	46.50	47.00	.....
Erie	46.00	46.50	46.50	47.00	.....
Everett	....	50.50	51.00	.....	.....
Granite City	47.90	48.40	48.90	.....	.....
Ironton, Utah	46.00	46.50	.....	.....	.....
Pittsburgh	46.00	46.50	46.50	47.00	.....
Geneva, Utah	46.00	46.50	.....	.....	.....
Sharpsville	46.00	46.50	46.50	47.00	.....
Steelton	48.00	48.50	49.00	49.50	54.00
Struthers, Ohio	46.00	.....	.....	.....	.....
Swedeland	48.00	48.50	49.00	49.50	.....
Toledo	46.00	46.50	46.50	47.00	.....
Troy, N. Y.	48.00	48.50	49.00	.....	54.00
Youngstown	46.00	46.50	46.50	47.00	.....

DELIVERED PRICES (BASE GRADES)

Consuming Point	Producing Point	Rail Freight Rate	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Boston	Everett	$0.50 Arb.	.....	50.50	51.00	.....	.....
Boston	Steelton	6.90	.....	.....	.....	.....	60.90
Brooklyn	Bethlehem	4.29	.....	52.79	53.29	53.79	.....
Cincinnati	Birmingham	6.70	45.58	46.08	.....	.....	.....
Jersey City	Bethlehem	2.63	.....	51.13	51.63	52.13	.....
Los Angeles	Geneva-Ironton	7.70	53.70	54.20	.....	.....	.....
Mansfield	Cleveland-Toledo	3.33	49.33	49.83	49.83	50.33	54.33
Philadelphia	Bethlehem	2.39	50.39	50.89	51.39	51.89	.....
Philadelphia	Swedeland	1.44	49.44	49.94	50.44	50.94	.....
Philadelphia	Steelton	3.09	.....	.....	.....	.....	57.09
Rochester	Buffalo	2.63	48.63	49.13	49.63	.....	.....
San Francisco	Geneva-Ironton	7.70	53.70	54.20	.....	.....	.....
Seattle	Geneva-Ironton	7.70	53.70	54.20	.....	.....	.....
St. Louis	Granite City	0.75 Arb.	48.65	49.15	49.65	.....	.....
Syracuse	Buffalo	3.58	49.58	50.08	50.58	.....	.....

Producing point prices are subject to switching charges; silicon differential (not to exceed 50c per ton for each 0.25 pct silicon content in excess of base grade which is 1.75 to 2.25 pct for foundry iron); phosphorus differentials, a reduction of 38c per ton for phosphorus content of 0.70 pct and over manganese differentials, a charge not to exceed 50c per ton for each 0.50 pct manganese content in excess of 1.00 pct. $2 per ton extra may be charged for 0.5 to 0.75 pct nickel content and $1 per ton extra for each additional 0.25 pct nickel.

Silvery iron (blast furnace) silicon 6.01 to 6.50 pct. C/L per g.t., f.o.b. Jackson, Ohio—$59.50; f.o.b. Buffalo, $60.75. Add $1.00 per ton for each additional 0.50 pct Si up to 17 pct. Add 50c per ton for each 0.50 pct Mn over 1.00 pct. Add $1.00 per ton for 0.75 pct or more P. Bessemer ferrosilicon prices are $1.00 per ton above silvery iron prices of comparable analysis.

Charcoal pig iron base price for low phosphorus $60.00 per gross ton, f.o.b. Lyle, Tenn. Delivered Chicago, $68.56. High phosphorus charcoal pig iron is not being produced.

UNIVERSITY OF MICHIGAN LIBRARIES

FERROALLOYS

Ferromanganese

78-82% Mn, Maximum contract base price, gross ton, lump size.

F.o.b. Birmingham	$174
F.o.b. Niagara Falls, Alloy, W. Va., Welland, Ont.	$172
F.o.b. Johnstown, Pa.	$174
F.o.b. Sheridan, Pa.	$172
F.o.b. Etna, Clairton, Pa.	$175

$2.00 for each 1% above 82% Mn, penalty, $2.15 for each 1% below 78%.

Briquets—Cents per pound of briquet, delivered, 66% contained Mn.

Carload, bulk	10.45
Ton lots	12.05
Less ton lots	12.95

Spiegeleisen

Contract prices gross ton, lump, f.o.b.

	16-19% Mn 3% max. Si	19-21% Mn 3% max. Si
Palmerton, Pa.	$64.00	$65.00
Pgh. or Chicago	65.00	66.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.

96% min. Mn, 0.2% max. C, 1% max. Si, 2% max. Fe.

Carload, packed	35.5
Ton lots	37.0

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.

Carloads	28
Ton lots	30
Less ton lots	32

Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, delivered.

	Carloads	Ton	Less
0.07% max. C, 0.06% P, 90% Mn	25.25	27.10	28.30
0.10% max. C	24.75	26.60	27.80
0.15% max. C	24.25	26.10	27.30
0.30% max. C	23.75	25.60	26.80
0.50% max. C	23.25	25.10	26.30
0.75% max. C, 7.00% max. Si	20.25	22.10	23.30

Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C. For 2% max. C, deduct 0.2¢.

Carload bulk	8.95
Ton lots	10.60
Briquet, contract basis carlots, bulk delivered, per lb of briquet	10.30
Ton lots	11.90
Less ton lots	12.80

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $77.00 gross ton, freight allowed to normal trade area; Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $73.50. Add $1.00 per ton for each additional 0.50% Si up to and including 18%. Add $1.00 for each 0.50% Mn over 1%.

Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, for ton lots packed.

96% Si, 2% Fe	20.70
97% Si, 1% Fe	21.10

Silicon Briquets

Contract price, cents per pound of briquet, bulk, delivered, 40% Si, 1 lb Si briquets.

Carload, bulk	6.30
Ton lots	7.90
Less ton lots	8.80

Electric Ferrosilicon

Contract price, cents per pound contained Si, lump size, bulk, in carloads, delivered.

25% Si	17.00
50% Si	11.30
75% Si	13.50
85% Si	14.65
90-95% Si	16.50

Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
Less ton lots	2.40	3.30	4.55

Ferrochrome

Contract prices, cents per pound, contained Cr, lump size, bulk, in carloads, delivered. (65-72% Cr, 2% max. Si)

0.06% C	28.75
0.10% C	28.25
0.15% C	28.00
0.20% C	27.75
0.50% C	27.50
1.00% C	27.25
2.00% C	27.00
65-69% Cr, 4-9% C	20.50
62-66% Cr, 4-6% C, 6-9% Si	21.35

Briquets — Contract price, cents per pound of briquet, delivered, 60% chromium.

Carload bulk	13.75
Ton lots	15.25
Less ton lots	16.15

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 5¢ for each additional 0.25% N.

S. M. Ferrochrome

Contract price, cents per pound chromium contained, lump size, delivered.

High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

Carloads	21.60
Ton lots	23.75
Less ton lots	25.25

Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.

Carloads	27.75
Ton lots	30.05
Less ton lots	31.85

Chromium Metal

Contract prices, per lb chromium contained packed, delivered, ton lots. 97% min. Cr, 1% max. Fe.

0.20% max. C	$1.09
0.50% max. C	1.05
9.00% min. C	1.04

Calcium-Silicon

Contract price per lb of alloy, lump, delivered.

30-33% Ca, 60-65% Si, 3.00% max. Fe.

Carloads	17.90
Ton lots	21.00
Less ton lots	22.50

Calcium-Manganese—Silicon

Contract prices, cents per lb of alloy, lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads	19.25
Ton lots	21.55
Less ton lots	22.55

CMSZ

Contract price, cents per pound of alloy, delivered.

Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.

Alloy 5: 50-56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C.

Ton lots	19.75
Less ton lots	21.00

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. V-5: 38-42% Cr, 17-19% Si, 8-11% Mn.

Ton lots	15.75¢
Less ton lots	17.00¢

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload packed	17.00¢
Ton lots to carload packed	18.00¢
Less ton lots	19.50¢

SMZ

Contract price, cents per pound of alloy, delivered. 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe, ½ in. x 12 mesh.

Ton lots	17.25
Less ton lots	18.50

Other Ferroalloys

Alsifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.	
Carload	7.40¢
Ton lots	8.80¢
Calcium molybdate, 45-50%, f.o.b. Langeloth, Pa., per pound contained Mo.	96¢
Ferrocolumbium, 50-60% contract basis, delivered, per pound contained Cb.	
Ton lots	$2.90
Less ton lots	3.05
Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo.	$1.10
Ferrophosphorus, electrolytic, 23-26%, carlots, f.o.b. Siglo, Mt. Pleasant, Tenn., $3 unitage, per gross ton	$65.00
10 tons to less carload	75.00
Ferrotitanium, 40%, regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed east of Mississippi and north of Baltimore, ton lots, per lb contained Ti	$1.28
Ferrotitanium, 25%, low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed east of Mississippi and north of Baltimore, ton lots, per lb contained Ti	$1.40
Less ton lots	1.45
Ferrotitanium, 15 to 19%, high carbon, f.o.b. Niagara Falls, N. Y., freight allowed east of Mississippi and north of Baltimore, carloads per net ton	$160.00
Ferrotungsten, standard, lump or ¼ x down, packed, per pound contained W, 5 ton lots, delivered	$2.25
Ferrovanadium, 35-55%, contract basis, delivered, per pound, contained, V.	
Openhearth	$2.90
Crucible	3.00
High speed steel (Primos)	3.10
Molybdenum oxide briquets, f.o.b. Langeloth, Pa.; bags, f.o.b. Wash., Pa., per lb contained Mo.	95¢
Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound	
Carload, bulk, lump	11.00¢
Ton lots, bulk, lump	11.50¢
Ton lots, packed, lump	11.75¢
Less ton lots, lump	12.25¢
Vanadium pentoxide, 88-92% V_2O_5 contract basis, per pound contained V_2O_5	$1.20
Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.	
Ton lots	21.00¢
Zirconium, 12-15%, contract basis, lump, delivered, per lb of alloy.	
Carload, bulk	6.60¢

Boron Agents

Contract prices, per lb of alloy, del.

Borosil, f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B	$4.25
Bortam, f.o.b. Niagara Falls	
Ton lots, per pound	45¢
Less ton lots, per pound	50¢
Carbortam, f.o.b. Suspension Bridge, N. Y.: freight allowed. Ti 15-18%, B 1.00-1.50%, Si 2.5-3.0%, Al 1.0-2.0%.	
Ton lots, per pound	8.625¢
Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lots	$1.20
F.o.b. Wash., Pa.; 100 lb and over	
10 to 14% B.	.75
14 to 19% B.	1.20
19% min. B.	1.50
Grainal, f.o.b. Bridgeville, Pa. freight allowed, 100 lb and over.	
No. 1	93¢
No. 6	63¢
No. 79	45¢
Manganese—Boron 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, delivered.	
Ton lots	$1.67
Less ton lots	1.79
Nickel—Boron 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered.	
Less ton lots	$1.80
Silcaz, contract basis, delivered	
Ton lots	45.00¢

IMPORTED ORES

Beryllium Ore

Imported ore, 10 to 12% BeO, $25 to $27 per short ton unit, c.i.f. U. S. ports.

Chrome Ore

Imported ore, per gross ton, dry basis, subject to penalties if guarantees are not met, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Ore., and/or Tacoma, Wash.

Indian and African
- 48% Cr_2O_3, 3 to 1 ratio $39.00
- 48% Cr_2O_3, 2.8 to 1 ratio 37.50
- 48% Cr_2O_3, no ratio 31.00

Philippine Islands
- 48% Cr_2O_3, 3 to 1 ratio ..$39.00 to 41.00

Rhodesian
- 48% Cr_2O_3, 3 to 1 ratio $39.00
- 48% Cr_2O_3, no ratio 30.00
- 45% Cr_2O_3, no ratio ....$27.00 to 27.50

South African (Transvaal)
- 50% Cr_2O_3, no ratio ....$29.50 to 30.50
- 48% Cr_2O_3, no ratio ..... 29.00 to 30.00
- 45% Cr_2O_3, no ratio 26.50
- 44% Cr_2O_3, no ratio ..... 25.50 to 26.00

Turkish
- 48% Cr_2O_3, 3 to 1 ratio..$39.00 to 41.00

Domestic
- 48% Cr_2O_3, 3 to 1 ratio, f.o.b. nearest shipping point $39.00

Manganese Ore

On long-term contracts involving large tonnages prices are nominal and subject to other factors of negotiation. Nearby business, basis 48% Mn, duty paid, 81.8¢ to 83.8¢ per long ton unit, c.i.f. U. S. ports. Prices on lower grade ore is adjusted to the Mn content and may be subject to penalties according to the content of impurities.

Titanium Ore

Imported ore, ilmenite, 56 to 59% TiO_2, c.i.f. Atlantic seaboard, $16 to $18 per gross ton, according to grade and impurities. Rutile, granular form, per lb, guaranteed minimum 94 to 96% concentrate, $90 to $100 per short ton, c.i.f. carload lots, Atlantic seaboard.

Note — Prices on many foreign ores show fluctuations that are dependent on quality, quantity, commissions, delivery and other factors of negotiation. Quotations are considered representative, but may be subject to penalties or premiums, according to the content of impurities, etc.

Short ton unit equals 20.0 lb.
Long ton unit equals 22.4 lb.

Ore prices per ton are calculated by multiplying the price per unit of contained metal by the number of units per ton. The number of units per ton is the percentage figure.

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.

Swedish sponge iron c.i.f. New York, ocean bags	7.4¢ to 9.0¢
Domestic sponge iron, 98+% Fe, carload lots	9.0¢ to 15.0¢
Electrolytic iron, annealed, 99.5+% Fe	31.5¢ to 39.5¢
Electrolytic iron, unannealed, minus 325 mesh, 99+% Fe	48.5¢
Hydrogen reduced iron, minus 300 mesh, 98+% Fe	63.0¢ to 80.0¢
Carbonyl iron, size 5 to 10 microns, 98%, 99.8+% Fe	90.0¢ to $1.75
Aluminum	29.00¢
Antimony	45.78¢
Brass, 10 ton lots	22.75 to 25.25¢
Copper, electrolytic	27.75¢
Copper, reduced	27.625¢
Cadmium	$2.40
Chromium, electrolytic, 99% min.	$3.50
Lead	21.55¢
Manganese	55.00¢
Molybdenum, 99%	$2.65
Nickel, unannealed	61.00¢
Nickel, spherical, minus 30 mesh, unannealed	68.00¢
Silicon	34.00¢
Solder powder	8.5¢ plus metal cost
Stainless steel, 302	75.00¢
Tin	$1.08
Tungsten, 99%	$2.90
Zinc, 10 ton lots	15.50 to 18.25¢

ELECTRODES

Cents per lb, f.o.b. plant, threaded electrodes with nipples, unboxed

Diameter in in.	Length in in.	
Graphite		
17, 18, 20	60, 72	16.00¢
8 to 16	48, 60, 72	16.50¢
7	48, 60	17.75¢
6	48, 60	19.00¢
4, 5	40	19.50¢
3	40	20.50¢
2½	24, 30	21.00¢
2	24, 30	23.00¢
Carbon		
40	100, 110	7.50¢
35	65, 110	7.50¢
30	65, 84, 110	7.50¢
24	72 to 104	7.50¢
17 to 20	84, 90	7.50¢
14	60, 72	8.00¢
10, 12	60	8.25¢
8	60	8.50¢

REFRACTORIES

(F.o.b. works)

Fire Clay Brick

Carloads, Per 1000

- First quality, Pa., Ky., Mo., Ill. (except Salina, Pa., add $5) .. $80.00
- No. 1 Ohio 74.00
- Sec. quality, Pa., Md., Ky., Mo., Ill. 74.00
- No. 2 Ohio 66.00
- Ground fire clay, net ton, bulk (except Salina, Pa., add $1.50) 11.50

Chrome Brick

Per Net Ton

- Standard chemically bonded, Balt., Chester $69.00

Silica Brick

- Mt. Union, Pa., Ensley, Ala. $80.00
- Childs, Pa. 84.00
- Hays, Pa. 85.00
- Chicago District 89.00
- Western, Utah and Calif. 95.00
- Super Duty, Hays, Pa., Athens, Tex. ..... $85.00 to 95.00
- Silica cement, net ton, bulk, Eastern (except Hays, Pa.)..$13.75 to 14.00
- Silica cement, net ton, bulk, Hays, Pa. 16.00
- Silica cement, net ton, bulk, Ensley, Ala. 15.00
- Silica cement, net ton, bulk, Chicago District ..... $14.75 to 15.00
- Silica cement, net ton, bulk, Utah and Calif. 21.00

Magnesite Brick

- Standard, Balt. and Chester $91.00
- Chemically bonded, Balt. and Chester 80.00

Grain Magnesite

Std. 3/8-in. grains

- Domestic, f.o.b. Balt. and Chester, in bulk, fines removed ....$56.00 to 56.50
- Domestic, f.o.b. Chewelah, Wash., in bulk with fines ..... $30.50 to 31.00
- in sacks with fines ..... 35.00 to 35.50

Dead Burned Dolomite

- F.o.b. producing points in Pennsylvania, West Virginia and Ohio, per net ton, bulk, Midwest, add 10¢: Missouri Valley, add 20¢ $12.25

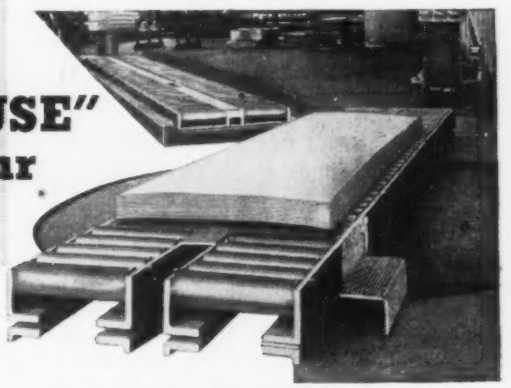
LAKE SUPERIOR ORES

(51.50% Fe; natural content, delivered lower lake ports)

Per gross ton

- Old range, bessemer $7.60
- Old range, nonbessemer 7.45
- Mesabi, bessemer 7.35
- Mesabi, nonbessemer 7.20
- High phosphorus 7.20

like a "ROUNDHOUSE" *inside* your plant



A-F makes it easier

to distribute heavy materials to proper bays!

THIS A-F ROLLER CONVEYOR mounted on a powered turntable now distributes stacked sheet steel to the many work bays in this modernized steel plant—easier and faster. It is just one section of the A-F *Engineered* Completely Co-ordinated Conveying System that has increased efficiency and lowered handling costs.

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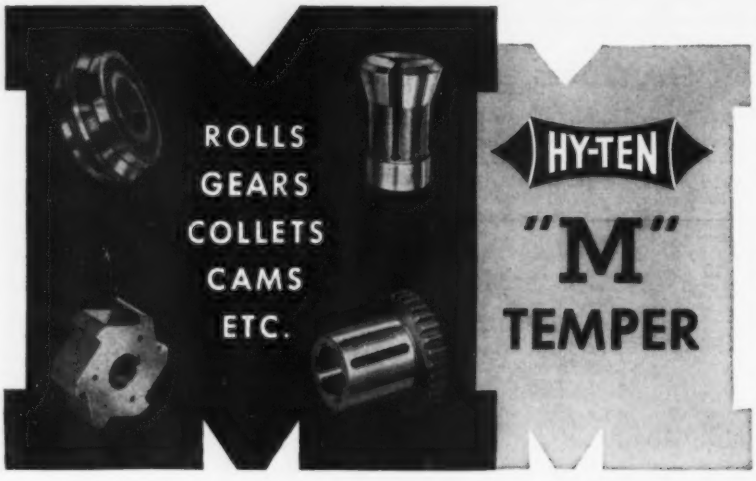

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"M" TEMPER oil hardening steel was developed specifically for such vital, punishment-taking parts as dies, cams, collets, forming rolls, clutches, gears, etc. "M" TEMPER effectively combines high hardness with maximum toughness, minimum distortion, extreme density and great strength – properties that ideally combine to resist wear and breakage. This grade develops the advantages of the powerful alloys – chromium, nickel and molybdenum. Moreover, "M" TEMPER has excellent forging properties and is readily machinable in the annealed condition. Although low in cost, "M" TEMPER has non-deforming properties comparable to, and in many cases superior to, much more expensive steels.

WL *steels are metallurgically constant. This guarantees uniformity of chemistry, grain size, hardenability—thus eliminating costly changes in heat treating specifications.*

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HY-TEN and AISI

Iron Age *Introduces*

Continued from Page 26

John A. Stierstorfer has been appointed senior synthetic enamel chemist, industrial finishes department, Stamford, Conn., branch, ATLAS POWDER CO., Wilmington, Del. Mr. Stierstorfer has been with the company for the past 12 years in the development laboratories of eastern and midwestern finish and paint manufacturers.

J. L. SINCLAIR, Cleveland district manager, mechanical goods division, Goodyear Tire & Rubber Co.

John L. Sinclair has been appointed Cleveland, Ohio, district manager of the mechanical goods division, GOODYEAR TIRE & RUBBER CO., Akron, Ohio. Mr. Sinclair has been associated with the company's division since 1924.

Eugene C. O'Connell and **Clarence H. Gabriel** have been appointed managers of the INDEPENDENT PNEUMATIC TOOL CO., Aurora, Ill. They will manage the San Francisco branch and the Denver branch respectively. Mr. O'Connell and Mr. Gabriel were formerly service engineers for the company.

A. C. Scates has been named sales representative in Mississippi and Louisiana, and in the southern portion of Arkansas for the NATIONAL RADIATOR CO., Johnstown, Pa. Mr. Scates has served for many years as manager of the N. O. Nelson Co. branch in Jackson, Miss.

W. J. Corr has been appointed director of service, a newly created post, of MACK TRUCKS, INC., New York. Mr. Corr has been with the company

Turn to Page 153

BON AGE INTRODUCES

Continued from page 150

for a quarter of a century, and served as service manager for its branches at Akron, Cincinnati, Chicago, and for its central division.

HOWARD W. KING, west coast district manager, Diamond Chain Co., Inc.

Howard W. King has been appointed west coast district manager DIAMOND CHAIN CO., INC., Indianapolis, Ind. For the past 14 years Mr. King has been the company's district sales representative in Chicago.

Frederick J. Samerdyke has been elected executive vice-president of Gunnison Homes, Inc., New Albany, Ind. Mr. Samerdye has been associated with the company for more than two years and joined the company as assistant to the president.

L. M. Campbell has been appointed sales manager of the FAIRMONT ALUMINUM CO., Fairmont, W. Va. Mr. Campbell has been with the company in the sales department for more than 20 years.

Erling G. Fossum, an employee of STEWART-WARNER CORP., Chicago, since 1926, has been named general manager of Stewart-Warner Electric, succeeding **Samuel Insull, Jr.**, who has resigned. He has been assistant to the president the past year.

George A. Sauer has been appointed supervisor of division offices, Merchandising Div., ELECTRIC AUTO-LITE CO., Toledo. **Lee M. Melton** has been named district supervisor of the Central Div., with headquarters in St. Louis.

OUT OUR WAY

JOE IS LISTENING TO THE BIGGEST MISTAKE HE EVER MADE IN HIS LIFE/ JUST TO SAVE A FEW CENTS, HE TRIED TO GET ALONG WITHOUT SOL-SPEEDI-DRI ON THE SHOP FLOOR. SO LOOK WHAT HAPPENED/
ONE THING ABOUT JOE, HE LISTENS WELL TO HIS MISTAKES--SO WELL HE'LL NEVER TRY TO DO WITHOUT SOL-SPEEDI-DRI AGAIN/
NEVER AGAIN!
J.R.WILLIAMS
T. M. REG. U. S. PAT. OFF.
COPR. 1949 BY NEA SERVICE, INC.

Don't take chances! Get the New Improved Sol-Speedi-Dri!

The new, Improved Sol-Speedi-Dri saves you money because you get more bulk, more coverage, more absorption, per pound. Sol-Speedi-Dri makes shop floors safe for working, safe for walking—cuts down on fire hazards—by soaking up all liquids—oil and grease included. Always be safe, be economical, with the new improved Sol-Speedi-Dri.

★

SPEEDI-DRI CORP., 1 Wall Street, New York 5, N.Y.

Warehouse stocks maintained in principal cities of the United States and Canada.

Inquirers in New York, New England and New Jersey should write to Speedi-Dri Corp. Elsewhere in U.S. to Waverly Petroleum Products Co., 1724 Chestnut St., Phila. 3, Pa.

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DURALOY

Cast with Very High Nickel!

Here are some Duraloy Castings with a 65% Nickel—15% Cr content, alloyed to meet exceptionally high temperatures and severe corrosion conditions in connection with Diffuser operations. This is more than a high nickel alloy; it's very high...somewhat out of the ordinary but indicative of what Duraloy is doing in the field of high alloy castings.

We have been specializing in high alloy static castings since 1922 and in high alloy centrifugal castings since 1931; both pioneering years. We have a big foundry, modern in every respect...modern in production, control, and test facilities. We have skilled metallurgists and foundrymen long experienced in the high alloy casting field.

In short, we are staffed and have every facility to serve you on high alloy castings up to 7½ tons, individual casting weight.

THE DURALOY COMPANY

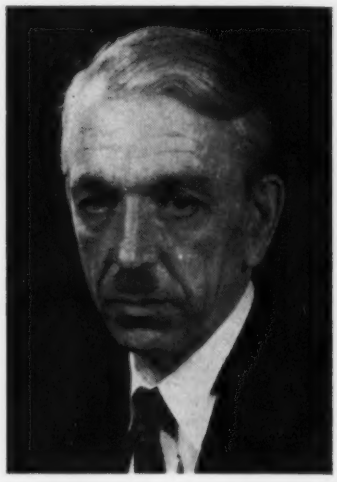
Office and Plant: Scottdale, Pa. • *Eastern Office:* 12 East 41st Street, New York 17, N. Y.

F. O. NELSON, 1743 McCormick Building, Chicago, Illinois — Detroit: F. B. CORNELL & ASSOCIATES

METAL GOODS CORP. St. Louis • Houston • Dallas • Tulsa • New Orleans • Kansas City

IRON AGE INTRODUCES

Continued



E. J. RIDDER, assigned to aluminum design work for the staff of Technical Service Engineers, Reynolds Metals Co.

E. J. de Ridder has recently joined the REYNOLDS METALS CO., Louisville. He will be on the staff of the technical service engineers, where he has been assigned to aluminum design work.

Curtis D. Cummings has been appointed sales manager of the ALLISON CO., Bridgeport, Conn. Mr. Cummings was formerly associated with SKF Industries, Inc., for 12 years. He served as a sales engineer until 1942 and more recently as manager of the Industrial Sales Dept.

Fred H. Fick has been elected secretary of INTERNATIONAL BUSINESS MACHINES CORP., New York. He had been serving as assistant secretary since April 1947. Mr. Fick joined IBM in 1925 and was identified with various departments of the business before being named an officer of the organization.

OBITUARY

Crispin Oglebay, 73, chairman of the board and a director of Oglebay, Norton & Co., Cleveland, died Oct. 23.

B. A. Patch, Jr., 50, Chicago district manager, Ohio Ferro-Alloys Corp., Canton, died Oct. 17.

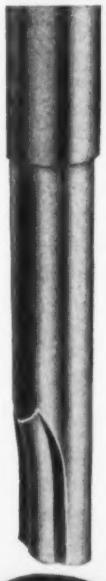
Val Hansel, 42, New York sales manager, Peter A. Frasse & Co., New York, died Oct. 25.

Bruce Haines, Jr., 31, vice-president and works manager, E. E. Souther Iron Co., Wellston, Mo., died Oct. 23.

Resume Your Reading on Page 27

Time and Cost Saving Features

TYPE "A" ASSEMBLY BIT



COMMON SCREWDRIVER

ON WHICH CLUTCH HEAD CHALLENGES COMPARISON WITH ANY AND ALL OTHER SCREWS

1. ***What Other Screw*** equals the high visibility of the CLUTCH HEAD recess to check out the slow-down of hesitation . . . even with "green" operators?
2. ***What Other Screw*** frees the line from burred and chewed-up heads with automatic straight driving . . . with Center Pivot entry that prevents driver canting?
3. ***What Other Screw*** has a non-tapered driving engagement (without dangerous "ride-out" as set up by tapered driving) to eliminate the hazard of skid damage? . . . and the need for fatiguing end pressure?
4. ***What Other Screw*** provides a simple Lock-On which unites screw and bit as a unit to hurdle "fumble spots" by permitting one-handed reaching and driving from any angle?
5. ***What Other Driver*** can begin to approach the durability record of the rugged Type "A" Bit . . . 214,000 screws driven non-stop?
6. ***What Other Assembly Bit*** can be *repeatedly* reconditioned on the spot by a 60-second application of the end surface to a grinding wheel . . . for unmatched tool economy.
7. ***What Other Modern Screw*** has a recess basically designed for operation with a common screwdriver . . . for the simplification of field service adjustments?

According to users of CLUTCH HEAD *Screws, you may confidently expect these time- and cost-saving features to deliver assembly production increases ranging from 15% to 50%.*

CLUTCH HEAD · SCREWS ·

The New CLUTCH HEAD *Brochure details and illustrates the exclusive advantages of America's Most Modern Screw. Your copy will come to you by mail on request . . . mentioning the types and sizes of screws in which you are interested.*

UNITED SCREW AND BOLT CORPORATION

CLEVELAND 2 CHICAGO 8 NEW YORK 7

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"thickness control"

affects your cash register

★ Savings of $152.00 per 100 sheets of polished 18 gauge stainless steel are real savings! By specifying MicroRold — the Stainless Steel Sheets with "Thickness-Control"—you too can effect such savings. Here's how —

Standard steel buying practice has been to order by gauge number. You can order MicroRold by decimal thickness with a tolerance of only 3%, plus or minus, as compared to the allowable plus or minus of 10%.

Average saving in theoretical weight is 3.15 pounds per sheet, or $1.52 per sheet.

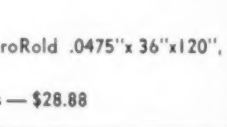
Cost of One Sheet of Polished 18 Gauge 36"x 120"* when Thickness May Vary Plus or Minus 10%.

.052"— 65.52 Pounds — $31.61
.051"— 64.26 Pounds — $31.01
.050"— 63.00 Pounds — $30.40
.049"— 61.74 Pounds — $29.79 (Theoretical Weight)
.048"— 60.48 Pounds — $29.18
.047"— 59.22 Pounds — $28.57

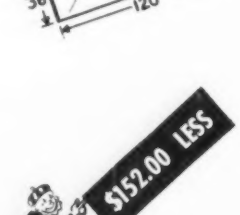
Cost of One Sheet of Polished MicroRold .0475"x 36"x120", Plus or Minus 3% on Thickness.

.0475"— 59.85 Pounds — $28.88

Each one-thousandth inch (.001") variation in thickness represents 1.26 pounds on the standard 36"x120" sheet. *And you pay for steel by weight.*



So, you may save $152.00 per 100 sheets of polished 18 gauge sheets when you buy MicroRold—the Stainless Steel Sheets with "Thickness-Control."



**Savings are figured on a price of 48.25c per pound for Type 302 Stainless Steel, price including base; gauge, polish and quantity extras.*

MicroRold® Stainless Steel

WASHINGTON STEEL CORPORATION
WASHINGTON, PENNSYLVANIA

FREE

PUBLICATIONS

Continued from Page 36

uses; for silver brazing; and refrigerator or condenser repair are described in illustrated sheet. *Weldit Inc. For more information, check No.* 12 *on the postcard on p.* 37.

Rust Preventives

The story of Freedom-Valvoline rust preventive compounds is now available in new 14-p. booklet. *Freedom-Valvoline Oil Co. For more information, check No.* 13 *on the postcard on p.* 37.

Control Valve Catalog

Primary and secondary flow instruments and control valves described in catalog 50 include variable-area flow meters, frictionless series-resonant circuit transmitters, Rato-matic flow rate recorders, ratio controllers, Rato-Count totalizers, and Accuro-Batch control systems. *Fischer & Porter Co. For more information, check No.* 14 *on the postcard on p.* 37.

Foundry Ladles

Over 53 photographs, 25 drawings and 25 specification tables in new 40-p. catalog describe the full line of Whiting foundry ladles. *Whiting Corp. For more information, check No.* 15 *on the postcard on p.* 37.

Fastening Items

New 28-p. manual gives engineering data on Southco blind rivets, anchor nuts, panel fasteners, and door-retaining springs for fastening metal to metal, metal to plywood, and other combinations. *South Chester Corp. For more information, check No.* 16 *on the postcard on p.* 37.

Paint Spraying Equipment

Complete line of industrial paint spraying equipment including spray guns, overspray exhaust booths, and paint spray finishing systems

are described in elaborately illustrated 62-p. catalog. *M & E Mfg. Co. For more information, check No. 17 on the postcard on p. 37.*

Combustibles Recorder

Applications of the Bailey combustibles recorder to boiler furnaces, atmosphere producers, rotary kilns, industrial furnaces, and chemical processes are described and illustrated in new 16-p. bulletin. *Bailey Meter Co. For more information, check No. 18 on the postcard on p. 37.*

Metal Cleaners

Enthone metal cleaners for steel, brass, aluminum, and zinc are described in five separate 2-p. sheets. *Enthone, Inc. For more information, check No. 19 on the postcard on p. 37.*

Lathe Tooling Hints

Tooling for 44 different bar machine setups on Acme-Gridley machines is set forth in profusely illustrated 46-p. booklet that includes photos, details, and descriptive literature. *National Acme Co. For more information, check No. 20 on the postcard on p. 37.*

Suction Hose Couplings

Bulletin 5 features illustrations and selection specifications on Li-Hi male hose nipples, suction and water hose couplings, hose pipes and hose adapters. *Hose Accessories Co. For more information, check No. 21 on the postcard on p. 37.*

Barrel Tumbling Manual

The process of bulk finishing small parts is described in barrel tumbling manual just released. *Frederick Gumm Chemical Co., Inc. For more information, check No. 22 on the postcard on p. 37.*

Prime Mover

A high capacity, mechanically dumping barrow, mounted on a power-driven three-wheel chassis and steered by means of a rear caster wheel is illustrated and described in 8-p. booklet. *Bell Aircraft Corp. For more information, check No. 23 on the postcard on p. 37.*

Resume Your Reading on Page 37

"Hmm! An INSIDE job, Plunkett!"

Yes indeed! . . and an inside job by Thomas! *For every strip steel fabricator knows that you simply can't do a proper plating job on inside surfaces of tubular forms or deep drawn stampings. It has to be done by* pre-coating!

★ ★ ★

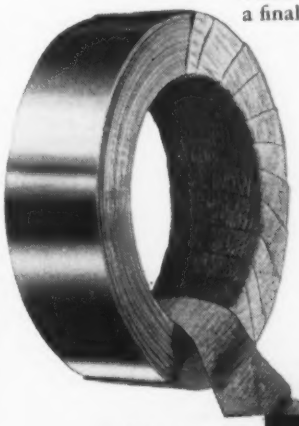
And *inside* or outside, you can depend on Thomas Strip always. Why? . . . First, the base steel is controlled by Thomas—to both your product and process requirements to assure quality and saleability. Second, the *pre-coat*—copper, brass, nickel, zinc, tin, chrome, or lacquer in colors—is so unitized with the steel in the exclusive Thomas process, that it will not peel, crack, chip or flake. With reasonable care, it will not damage in process and provides a final finish with real sell-appeal. It is uniform—on inside and outside surfaces alike—presenting no thin spots anywhere to bedevil quality control.

★ ★ ★

You can speed production, step up quality and efficiency—*and profits*—by using Thomas Strip. Cut your process down to its two essential steps—fabrication and assembly—and eliminate the others, with *pre-coated* Thomas Strip. Why not try it out? Thomas metallurgists will gladly talk over your problems with you—not obligating you in the least! Write today to:

THE THOMAS STEEL COMPANY
WARREN, OHIO

Specialists in Cold Rolled Strip Steel



COLD ROLLED STRIP STEEL

Electrocoated with Chromium, Nickel, Copper, Zinc and Brass • Hot Dipped Tin and Lead Alloy • Lacquer Coated in Colors • Annealed and Tempered Spring Steel • Alloy Strip Steel • Uncoated Strip Steel • Produced to Your Specifications.

Thomas Strip

SPEEDS PRODUCTION . . . CUTS COSTS

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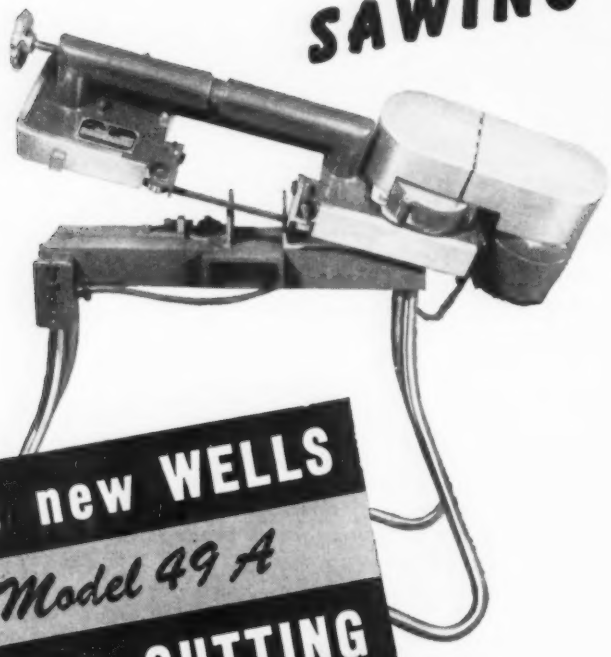
Now every shop can have the advantages of

BAND SAWING



The new WELLS Model 49A METAL CUTTING BAND SAW

No longer does any shop need be without the advantages of band sawing for metal cut-off work. The new Wells Model 49A fits the smallest shop's budget, yet it does a man-sized job in any plant. From its welded steel frame to its tubular steel base, the Wells Model 49A is a rugged shop tool that will give long, dependable service. Its portability is unequalled. Easy to operate without special training, the Model 49A can be used by anyone in the shop. Automatic shut-off at the end of the cut eliminates the need for the operator to stand by. The continuous cutting action, utilizing every tooth of the band saw blade, means more economical cutting too. Write for complete details, today.

DESIGN DETAILS

Capacity: Rectangular, 3½" x 6⅝"; Rounds, 3½" diameter.
Blade: Size—½" x .025" x 5'
Motor: 1/6 HP, Ball Bearing—foot mounting.
Speeds: Selective (belt change) 54, 100, 190 f.p.m.
Drive: "V" Belt.
Vise: Quick action.
Blade Guides: Stationary brackets with adjustable blade guides.
Wheels: Disc type idler and drive wheels, mounted on grease-sealed ball bearings.
Blade Tension: Incorporated in frame design.
Switch: Manual — automatic stop.
Height to top of Bed: 24"
Bed Area: 6½" x 24"
Floor Space: 16½" x 38"
Net Weight: Approx. 118 lbs.

Wells SAWS

Wells

Products by Wells are Practical

METAL CUTTING BAND SAWS

WELLS MANUFACTURING CORPORATION
202 WASHINGTON AVE., THREE RIVERS, MICH.

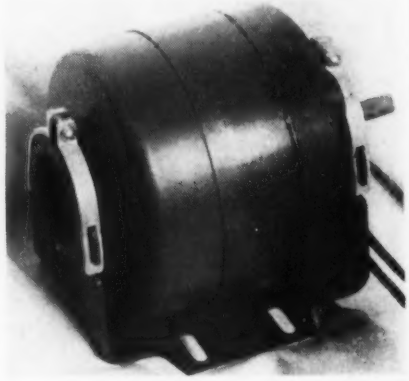
NEW PRODUCTION IDEAS

Continued from Page 40

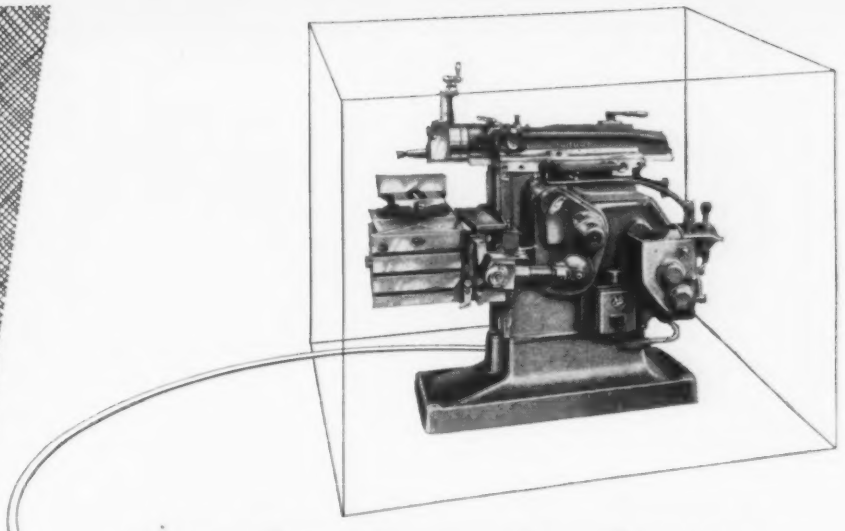
manually adjusting two clamps and rearranging the sheaves of the jackshaft pulley. The jackshaft spindle, mounted on ball bearings, transfers its drive directly to a piloted cable without use of an eccentric. The unit swings through a vertical arc and has a 360° horizontal motion. Power is supplied by NEMA motors ¼ to ¾ hp in No. 56 or 66 series frame. *Pratt & Whitney. For more information, check No.* 36 *on the postcard on p.* 37.

Self-Lubricating Motors

A new line of lifetime oil-lubricated, shaded-pole motors designed for operation in any position has been announced by GE and is designated type KSP. The new motors have been designed for use as drives for exhaust fans, cooling fans, evaporative coolers, unit heaters, condenser coolers, space heaters, small pumps, agitators and blowers. The motors are available



in either open or totally enclosed construction with ratings from 1/40 to 1/12 hp at 115 or 230 v at 60 cycles, and 1050 or 1550 rpm. Additional features include a new constant-flow lubrication system supplying oil from a large reservoir to the bearing surfaces regardless of the position of the motor; unit bearing construction in the shaft end of the motor; Formex (R) insulated wire stator windings; vi-



Production Package
ready to go . . .

Buy a Hendey 12" Universal Crank Shaper—plug it in—it's ready to go—without further purchases, because standard equipment *includes* table and vise for positioning and indexing work to any angle. You also get flanged mounted motor, mechanical controls on both sides, automatic lubrication, quick-change swivel head, adjustable, preloaded Timken bearings on the crank gear, plus many other features usually considered "extra".

The Hendey 12" Crank Shaper is finished like a fine watch, both inside and out. Here is an accurate, fast money-maker for tool room and production work. Write today for complete details.

BRIEF SPECIFICATIONS

Length of Stroke	12¾"
Strokes per minute	14 to 200
Speed changes	8
Vertical travel of tool slide	4⅝"
Table top tilts either way	15°
Max. distance vise to ram	8 13/16"
Max. rotation of table	360°
Max. vise opening	10½"
Net weight	2825 lbs.
Floor space	46" x 68"

Other Hendey Machines Include
Tool Room Lathes — 9"- 12"- 14"- 16"- 18"- 20"- 24"
Shapers — 12"- 16"- 20"

THE *hendey* MACHINE COMPANY

MAIN OFFICE & PLANT: TORRINGTON, CONN.

BRANCH OFFICES: New York, Chicago, Boston, Detroit, Rochester, Los Angeles, San Francisco

REPRESENTATIVES: Philadelphia, Cleveland, Pittsburgh

hendey

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STRUCTURAL STEEL FABRICATION

To meet any specification

for

INDUSTRIAL, OFFICE AND COMMERCIAL BUILDINGS

SCHOOLS

CHURCHES

APARTMENTS

THEATERS

TIPPLES

The LEVINSON STEEL COMPANY

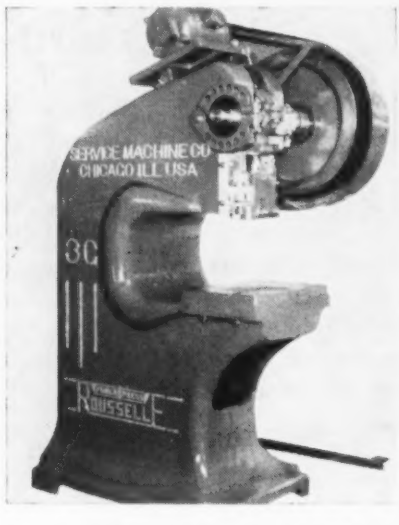
PITTSBURGH, PA.

LS-3

bration-absorbing end rings; and resilient cradle base and band mountings. *General Electric Co. For more information, check No. 37 on the postcard on p. 37.*

Deep Throat Press

Press operations working to the center of 36 in. sheets are possible with the new 25-ton Rousselle deep throat punch press. This press is equipped with single-stroke or continuous clutch, roller bearing flywheel, extra-long hardened and



ground ways, and a standard bolster plate measuring 14x20 in. Larger bolsters and punch holders can be furnished. Its frame, weighing 3200 lb, is an extra heavy semi-steel casting that is heavily reinforced; it is designed so that the bed protrudes, allowing clearance for some jobs that ordinarily would require horn presses. Operating speed of this press is 125 strokes per min. *Service Machine Co. For more information, check No. 38 on the postcard on p. 37.*

Special Welder

Increased production and quality are claimed for the Sciaky standard welder when using an indexing mechanism to weld an electric motor housing composed of seven parts. Parts are loaded on a 10-station indexing table by hopper and magazine feeds, and are welded

Turn to Page 163

This company* planned to spend $2000.00 to clean out fuel oil sludge-

HOUGHTO-SOLV saved them $1932.50!

How? Instead of a laborious, slow and costly hand cleaning of their fuel oil tanks containing 20,000 gallons of oil-sludge mixture, they poured in half a drum of HOUGHTO-SOLV, Houghton's powerful sludge solvent.

In a few short days the solvent had taken sludge into solution, saving a ten-cents-per-gallon removal cost and giving them 20,000 gallons of burnable oil. Lines and burners were clean, pumps free from clogging by sludge.

You, too, can get the same results if you'll try HOUGHTO-SOLV for sludged fuel oil systems. Write for new descriptive folder and prices.

E. F. HOUGHTON & CO., 303 W. Lehigh Ave., Phila. 33, Pa.

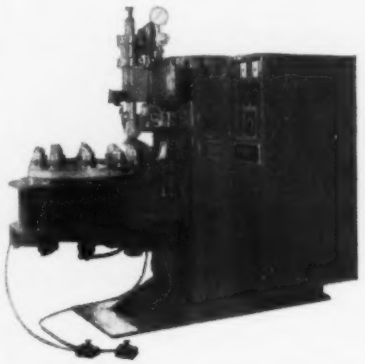
*Name on request.

HOUGHTON'S HOUGHTO-SOLV

THE FUEL OIL ADDITIVE THAT MAKES SLUDGE BURNABLE

Continued from Page 160

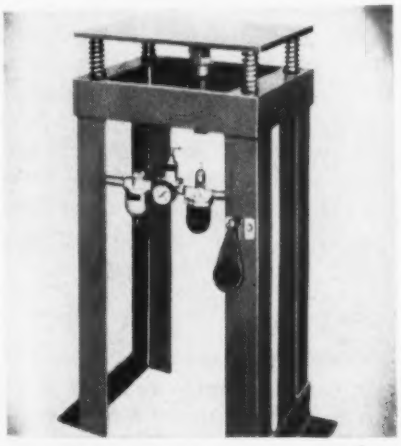
at the rate of 2000 units per hr. The table is ratchet actuated and synchronized with the welder. Where automatic feeding is not practical, parts can be loaded man-



ually. Thicknesses welded are 0.017, 0.023, and 0.029 in. cold rolled steel. After welding, the completed unit is automatically ejected. Three-phase control on the welder makes possible the triple thickness weld on a power rating of 100 kva. *Sciaky Bros., Inc. For more information, check No.* 39 *on the postcard on p.* 37.

Vibrating Table

A new vibrating table utilizing pneumatic power features a solid 12x18x½ in. sheet steel platform mounted on heavy-duty steel springs to prevent the transmis-



sion of vibration to the floor. Table operation is controlled by a knee valve that actuates the vibrating mechanism. Range of applications is possible by replacing the steel platform with a wood platform or various types of screens. The table

BORG-WARNER

(INGERSOLL STEEL DIVISION)

ENGINEERING B-W PRODUCTION

A dependable source for

STEEL

Borg-Warner operates at New Castle, Indiana, (Ingersoll Division) steel mills that roll many special steels for special uses. For example, here you will find a dependable source of—

- STEELS that *RESIST CORROSION*
- STEELS that *RESIST HEAT*
- STEELS for lower cost *STAINLESS PROTECTION*

So when you need solid stainless, heat-resisting alloy steel, or IngAclad stainless-clad steel—write, wire or phone. Our advisory service is yours for the asking without cost or obligation.

INGERSOLL STEEL DIVISION, Borg-Warner Corporation
310 South Michigan Avenue • Chicago 4, Illinois
Plants: Chicago, Illinois; New Castle, Indiana; Kalamazoo, Michigan

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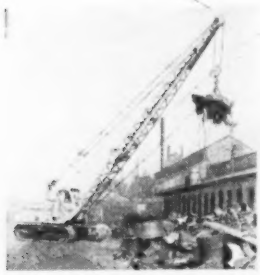
UNIT 1020A
HEAVY-DUTY
The One Machine that Keeps Up with the Baler!

UNIT 1020A . . . Perfectly balanced . . . All-around stability . . . Handles a 45 inch magnet with ease.



UNIT 1020A handling scrap in a mid-west industrial plant. Efficient, low cost operation.

The UNIT 1020A is designed and built for heavy-duty scrap yard operation. Extra long crawlers, wider axles and shoes, plus additional counterweight, provide perfect balance and all-around stability. Tipping strains are absorbed by hook-rollers. Owners using 45 inch magnets find them easy to handle. With full loads, there's no weaving or rocking. It has power and stability without bulk . . . fast on the hoist . . . easy on the swing. To modernize your yard — start with a UNIT 1020A.

The UNIT 1020A handles heavy steel, baled or loose scrap with day-in and day-out dependability.

UNIT CRANE & SHOVEL CORP.
6517 W. BURNHAM ST.
MILWAUKEE 14, WIS., U. S. A.

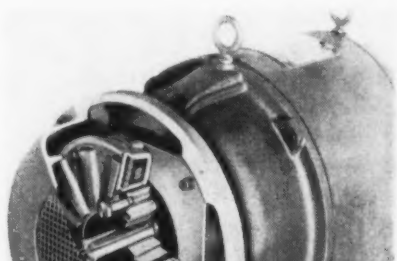
SHOVELS • DRAGLINES • CLAMSHELLS
CRANES • TRENCHOES • MAGNETS

A 5457-½A

provides a maximum of 1950 vibrations per min. Intensity of the vibration can be varied by a pressure control regulator. Maximum operating vibration frequency is obtained on a standard line pressure of 80 psi, with air consumption 8½ cfm. *Cleveland Vibrator Co. For more information, check No. 40 on the postcard on p. 37.*

Motor Brake

Easily controlled, fast, smooth cushioned stops of electric motors are provided by a new disk-type electric brake. The brake is a combination magnetic and friction type, electrically operated and designed for mounting to a standard

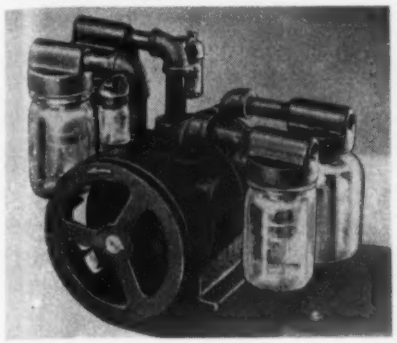


NEMA C flange. It requires 25-35 w dc for full application. Action starts when the current is applied. Brake action may be controlled to a fine degree, manually or automatically. The unit has high heat dissipation and offers constant self-adjustment. *Warner Electric Brake Co. For more information, check No. 41 on the postcard on p. 37.*

Air Pumps

Rotary-vane design of three new air pumps engineered for automatic feeding operations on punch presses, packaging machines, etc., produces a positive, pulseless air delivery. The dual chamber models deliver air pressure on one side and vacuum on the other, increasing efficiency, it is said, and simplifying installation. All three models are equipped with ball bearings and

V-belt pulley with integral fan for cooling and drive. The small dual pump delivers 9 cfm from each chamber at 1200 rpm, either or both chambers producing vacuum to 20 in. or pressure to 20 psi. The



large pump delivers 14 cfm from pressure chamber and 9 cfm from vacuum chamber, developing 15 psi pressure and 15 in. vacuum. A single chamber pump produces pressure or vacuum with 18 to 24 cfm depending on rpm. *Gast Mfg. Corp. For more information, check No. 42 on the postcard on p. 37.*

Conveyor Table Top

Demountable roller conveyor tops extend the range of standard Portelvators, portable elevating tables with four point support and three table surfaces. The conveyor tops are used for movement of extra heavy loads to and from the

table. Tops fit snugly over the top table surface, and are held in place by a flange that encompasses the table perimeter. The tops may be installed or removed without tools and are also available with rollers mounted at the ends. Either style can be furnished with a cam operated roller locking device. A

Buying metal cleaners on a trial-and-error basis is a costly process. The way to be sure of full value, *when you buy*, is to base your choice of products on the experience and reputation of the manufacturer.

Wyandotte Metal Cleaners are made by the world's largest producer of specialized cleaning compounds. In the complete Wyandotte line are cleaners for any soak, electrolytic, spray or tumble operation, as well as degreasing, paint stripping, burnishing and burring compounds.

Each Wyandotte formula is the result of extensive laboratory and field research and is based on 59 years' experience in chemicals; each product must meet the most exacting performance specifications.

No matter what your cleaning needs may be, your nearest Wyandotte Representative will be glad to fill them. In addition, if you are confronted with some special cleaning problem, Wyandotte's skilled technical service staff stands ready to help you.

•

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WYANDOTTE, MICHIGAN
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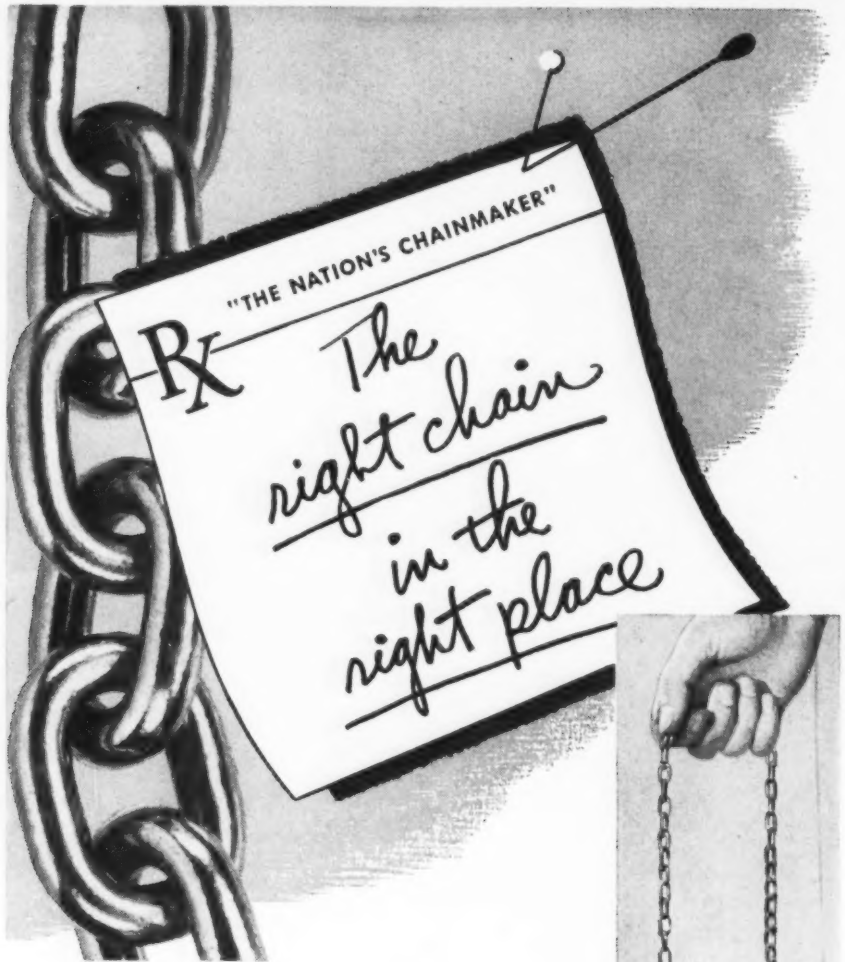

Here at York, we do not think of chain-making as merely a matter of producing tonnage. To offer a line of products as complete as the AMERICAN CHAIN line requires an intimate knowledge of chain design, the best use of alloys, proper heat-treating, galvanizing—plus the necessary machinery and equipment to take full advantage of that knowledge.

AMERICAN makes chain in sizes from that of a ship's anchor chain to that of a fish stringer. But size is only part of the story. A wide selection of patterns, material analyses and finishes—as well as a complete range of fittings and attachments—makes AMERICAN truly the

"COMPLETE CHAIN LINE"

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ACCO

AMERICAN CHAIN DIVISION
AMERICAN CHAIN & CABLE

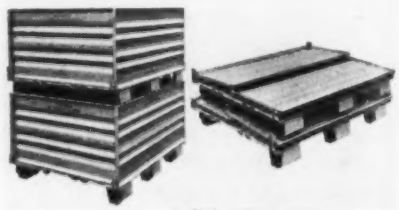
TRADE MARK

In Business for Your Safety

mechanical lift principle locks the table automatically at the height stopped. *Hamilton Tool Co. For more information, check No.* 43 *on the postcard on p.* 37.

Pallet Boxes

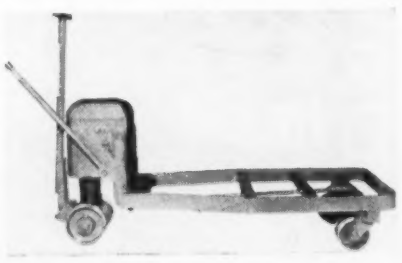
All-steel tiering pallet boxes built for intra-plant shipment of semi-processed and finished parts, castings, forgings and stampings and for short and long transportation of bulk products, have positive



locking, hinged sides that fold flat for low cost return and small space storage. Expanded metal sides of the Return-O-Tainer mesh correctly to prevent projecting of small parts. Boxes are 40 x 48 x 24 in. deep. *Fab-Weld Corp. For more information, check No.* 44 *on the postcard on p.* 37.

Lift Truck

Easy handling by one man of skid and pallet loads up to 6000 lb is possible with a new hydraulic lift truck. Features include a compact hydraulic system in a stream-



lined housing. The hydraulic pumping unit is self-contained. Underclearance is high. A telescopic lift handle permits use of the truck in narrow quarters. The truck is built 20 and 25 in. wide, with platform 36 to 72 in. long. *Barrett-Cravens Co. For more information, check No.* 45 *on the postcard on p.* 37.

Resume Your Reading on Page 41

Dear Editor

MELTING HIGH SPEED STEEL

I am spending a couple of months at the Valbruna Steel Co., Valbruna, Italy. They have destroyed their back issues of THE IRON AGE and now find need for the article on melting high speed steel by Harry Bigge. I believe this article appeared in October 1947. I would greatly appreciate tear sheets of the article if they are available.

CHARLES F. SAWYER
Plant Metallurgist
Vanadium Alloy Steel Co.
Vicenza, Italy

Two reprints of the article have been sent. —Ed.

CAST IRON GUTTERS

We are very anxious to make cast iron gutters ⅛, 3/16, and ¼ in. thick by machine instead of by hand, as there is a great scarcity nowadays of skilled gutter moulders. We hear that a simple method of making the gutters in 6-ft lengths has been thought out by American experts. We are desirous of contacting and reaching an agreement with one of these gentlemen regarding this process.

WALTER W. MITCHELL
Managing Director
Grahamston Iron Co., Ltd.
Falkirk, Scotland

GALVANNEALED SHEET

We would like to receive information on Galvannealed or Paint Grip sheets in widths wider than 48 in.

H. B. FREELAND
Freeland Sons Co.
Sturgis, Mich.

A list of manufacturers and sources of Galvannealed and similar sheet has been mailed.—Ed.

MOUNTING SPECIMENS

Will you please inform us if we can obtain a tear sheet of the article entitled "Mounting Metallographic Specimens at Room Temperature" by Herbert S. Kalish from the Mar. 10 issue.

A. E. SWANSON
Purchasing Dept.
Elgin National Watch Co.
Elgin, Ill.

A copy is being mailed you.—Ed.

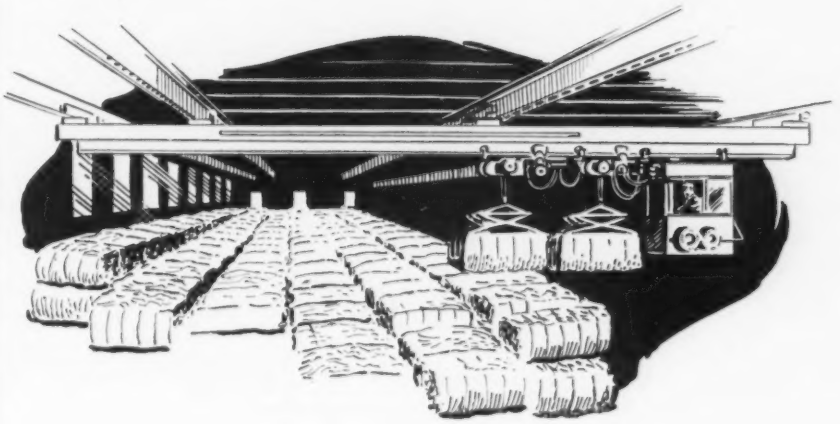
PLATING WASTE DISPOSAL

If you have any reprints of the recent article by M. O. Priester on plating waste disposal, I would appreciate receiving from 1 to 3 copies.

For Better Use of Cubic Volume . . .

For Low Cost Lift and Carrying . . .

STACK FROM THE AIR



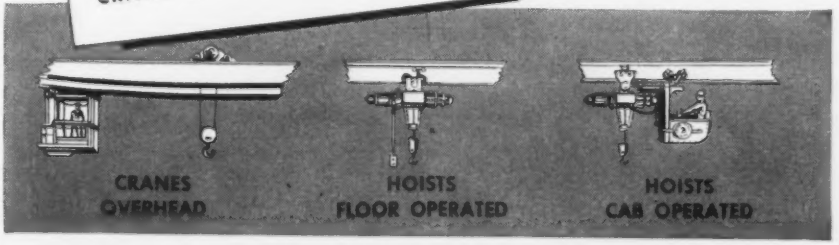
Stacking rolls of paper stock for storage with a "through the air" movement has lowered handling costs and produced more solid stacking in the storage area.

This warehouse picks up the loads *at the door* with overhead equipment, specially designed by Shepard Niles to operate with minimum headroom. No aisle space or turning radii are needed, every cubic foot of area is used for stacking "from the air."

This is one example of the service Shepard Niles specialists can supply to those with materials handling problems. There is economy in knowing where to leave off with one method and take up with the cheaper, faster, safer, "through the air" movement.

SHEPARD NILES
CRANE AND HOIST CORPORATION

Makes and sells all three lifting tools for airborne shop loads.



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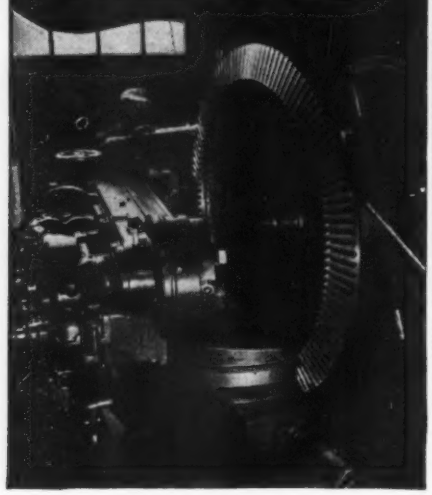
LARGE INDUSTRIAL GEARS



Bevel and mitre gears up to 60" dia. are cut on gear planers to accurate tolerances.

CUSTOM MADE GEARS

up to 145" diameter

You can save time, money and errors in your large and heavy industrial gear requirements with the prompt, custom service of SIMONDS GEAR. Within easy shipping distance of many heavy industry plants—with a personalized attention to your specific gear requirements—SIMONDS GEAR is able to assure you fast, accurate gear service for all heavier gear needs. Size range includes: Spur Gears up to 145"—Bevel and Mitre Gears up to 60"—Worm Gears up to 72"—also worms, worm gears, racks and pinions. Materials include: cast or forged steel, gray iron, bronze, silent steel, rawhide and bakelite. Place your next heavy gear inquiry with SIMONDS GEAR and test the difference!

Stock carrying distributors for Ramsey Silent Chain Drives and Couplings. V-Belts.

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DEAR EDITOR

Continued

These would be useful to members of the American Electroplaters' Research Project on this subject.

C. FRED GURNHAM
Technical Adviser
American Electroplaters' Society
Jenkintown, Pa.

Three copies have been sent.—Ed.

WELDING ELECTRODES

We would like to procure a copy of your publication "Comparable Arc-welding Electrodes" which we have read with great interest.

J. A. BOYER
Sales Dept.
Canadian Liquid Air Co., Ltd.
Montreal, Canada

LOWEST STEEL PRICE

One of our good friends abroad wants to know what the lowest base price for steel was here before the war and in what years between the two world wars?

JOHN KAFKA
General Sales Mngr.
B. M. Heede, Inc.

THE IRON AGE composite price of finished steel hit its lowest level in April, 1933, when it was 1.873¢ per lb. For complete years, 1932 and 1933 were very close.—Ed.

TOOL STEEL BRANDS

We would like very much to have a copy of the article "Comparative Tool Steel Brands," which appeared in the April 28 issue. Will you please advise whether this is available and if so, what is the cost?

MARGARET HOLTMAN
Librarian
P. R. Mallory & Co., Inc.
Indianapolis

Copies of the Comparative Tool Steel Brand reprint are still available at 15¢ each.—Ed.

NODULAR IRON

I would very much appreciate having a reprint of the article "Some Notes on The History of Nodular Irons" from the June 16 issue, as well as a copy of p. 100 from the May 19 issue on the same subject.

HOWARD F. LEWIS
General Sales Manager
Wade Mfg. Co.
Elgin, Ill.

STEEL POWDERS

We would like to have tear sheets of an article which appeared in the March 31 issue entitled "Prealloyed Steel Powders."

M. FRAZEE
American Wheelabrator & Equipment Corp.
Mishawaka, Ind.

COKE CONSUMPTION

We would like to obtain several copies of "Reducing Coke Consumption in

Give us your TOUGH machining jobs...

Every plant has at least one impossible machining job—where scrap loss is high—production is interrupted—costs out of line. That's the job to send us.

Here at Non-Gran you'll find a combination of engineering ingenuity—excellent equipment—and long contract manufacturing experience—skillfully coordinated to produce your parts exactly as you want them—when you need them—and in the most economical way.

Write for booklet showing "Our Story in Pictures."

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BRONZE CASTINGS • PRECISION MACHINE WORK

108 LANCASTER AVE., BERWYN 8, PA.

Metropolitan Philadelphia

DEAR EDITOR

Continued

Iron and Steel Production," which appeared in the July 14 issue.

G. B. MUNIBY
Bowering & Co.
New York

INVESTMENT CASTING

In the May 6 and 13, 1948 issues there is an article entitled "Critical Survey of Investment Casting," by D. von Ludwig. One of our inquirers is particularly interested in this article and asked if the author has published other articles on the same subject. The author mentions the use of Kaolin in investment casting. Can you give us any further details on this?

G. WHITT
Principal Librarian, Research Service
Public Library of South Australia
Adelaide, Australia

Your inquiry on the subject of investment casting has been forwarded to the author, D. von Ludwig, for reply.—Ed.

WIRE STRENGTH

Is there any published data available on the tensile strengths of various drawn wires? I am interested particularly in comparative data of #9 and smaller gages stainless steel wire, black, stainless and galvanized, aluminum, monel, and copper wires.

A. F. DIETRICH
Midland Engineering Co., Inc.
Fort Wayne, Ind.

HILLS OF HEMATITE

Kindly send us five copies of an article entitled "Hills of Hematite," by Ralph Vaill, which appeared in the Dec. 30, 1948, issue.

DONALD P. FARQUHAR
Cia. Acos Especiais Itabira
Rio de Janeiro

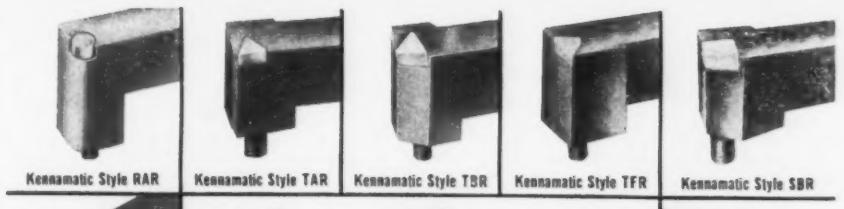
Reprints of this article are being mailed with our compliments.—Ed.

BLASTING SHOT

We are interested in making steel shot used for abrasive purposes and would appreciate any published information on the subject other than the well-known method of quenching in water. I believe there is a method of cutting up steel wire but do not have any further data. Any information which you can supply will be appreciated.

R. SEWELL
Research & Development Dept.
United Steel Companies Ltd.
Stockbridge, England

Names of sources to which you can write for specific information on cut wire shot have been sent.—Ed.



Kendex Style 11SKD

Kendex Style 3RKD

Kendex Style 3TKD

Kendex Style 11PKD

Planer Tool Style 11PH

Planer Tool Style 9PH

Planer Tool Style 5BPM

Here They Are

KENNAMETAL Developments in Mechanically-Held Tooling for Better Production at Less Cost

Kennametal mechanically-held tools are outstanding in their performance, and in the savings they effect, because:

THEY ELIMINATE THERMAL STRAINS

The inherent strength of Kennametal is more fully utilized. Harder grades can be used on heavy jobs at coarser feeds.

THEY SIMPLIFY TOOL SETTING

Tips can be repositioned, or replaced, without disturbing the tool holder.

THEY REDUCE GRINDING COSTS

Procedure is simpler and less frequently required. No steel needs to be ground – only the carbide. Indexing feature of Kennamatic and Kendex tools provides multiple cutting edges between regrinds.

THEY LOWER INVENTORY

Fewer tools are required to float a specific job, and only tips or inserts need to be stocked.

THEY INCREASE MACHINE PRODUCTIVITY

Down time is minimized because fewer tool changes and adjustments are required.

Our field representatives are fully equipped to help you apply this advanced tooling technique for better production at less cost. Ask them to demonstrate.

The tools illustrated are made in both hands, in various sizes, with Kennametal tips suitable for machining steel, cast iron, and non-ferrous alloys.

Clamped on Style BLH

Clamped-on Style FLH

Clamped-on Style GLH

Grooving Tool Style SVG

"Universal" Face Kennamill

"CF" Face Kennamill

"AF" Axial Face Kennamill

Does Kennametal Inc. Manufacture Brazed Tools, and Blanks?

Yes—Kennametal Inc. produces and sells directly to the user a greater number of different carbide tools of both brazed and mechanically-held types than any other manufacturer.

Send for Catalog 49

It shows the most complete and diversified line of carbide tools ever offered.

KENNAMETAL Inc.
SUPERIOR CEMENTED CARBIDES
LATROBE, PA., U.S.A.

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"What's so good about H-VW-M cobalt nickel plating processes?"

Richard E. Waite, Field Representative
H-VW-M Rochester Office

When a customer asks that question, he's *really* talking my language. There's no H-VW-M process I'd rather discuss than Cobalt-Nickel, especially the 9-H bath.

"Take plating costs, for instance. 9-H Cobalt-Nickel saves you money because no expensive brighteners, wetting agents, or anti-pitting agents are required. Besides, costly purification shutdowns can be eliminated because the Cobalt-Nickel processes are the only commercial plating baths which can be continuously purified without removing or destroying the active brightening agents.

"And look at your operating range. The composition, pH and operating conditions can be altered to give moderately hard or relatively soft deposits; full brightness or easily-buffed semi-bright deposits. The current density range is limited only by your equipment. And also important . . . Cobalt-Nickel baths can be 100% analyzed and scientifically controlled.

"You say, 'How about results?' Well, for one thing 9-H never produces striafied deposits as other nickels do. Instead, the result is always a fine-grained structure containing no organic inclusion . . . better corrosion resistance . . . better even than ordinary buffed nickel. And for even greater fineness of color, additional corrosion resistance and a harder finish, use H-VW-M No. 5 or H-VW-M Type AA Processes.

"And remember . . . H-VW-M works with you all the way . . . shows you how to set up for real low-cost operation with 9-H or any of the other H-VW-M Cobalt-Nickel Plating Processes."

Ask your H-VW-M representative, or write to "Headquarters," for Bulletin G-102, or Cobalt-Nickel Plating Processes.

*Hanson-Van Winkle-Munning has supplied the plating industry for over 70 years. Our sales-engineers are thoroughly familiar with *every* step in the process of electroplating and polishing. It is this *overall* knowledge that has made H-VW-M "Headquarters" for electroplating and polishing equipment, supplies and technical assistance.

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Manufacturers of
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For clean hardening, annealing, normalizing, carburizing, Ni-Carbing, etc., of many small parts.

The self-metering feed hopper arrangement permits the operator to pre load a one-half hour charge of work which is then continuously and uniformly processed without further attention, thereby eliminating costly man-hours. If desired, a continuous feeding mechanism may be employed which completely eliminates the need for an operator.

Write for Bulletin 801-4 today.

AMERICAN GAS FURNACE CO.
1004 LAFAYETTE ST. • ELIZABETH, N. J.

Exports and Imports of Iron, Steel Drop in Volume

Washington—Both exports and imports of iron and steel dropped in volume during July, according to estimates of the Commerce Dept. and American Iron & Steel Institute.

Exports during the month totaled 484,223 net tons, while imports totaled only 2851 net tons. Total exports for the first 7 months of 1949 now stand at 3,310,863 net tons, while total imports are reported at 349,155 net tons.

The above figures do not include scrap. Scrap exports totaled 187,511 net tons in July while imports totaled 52,359 net tons.

Product-by-product tabulations for exports and imports issued jointly by the two offices follow:

EXPORTS:	July 1949	First 7 Months 1949
Semifinished and Finished Products:		
Ingots, blooms, billets, slabs, sheet bars	41,864	171,010
Wire rods	6,973	36,154
Skelp	10,363	64,087
Concrete reinforcement bars	12,676	79,610
Steel bars, cold-finished	4,085	28,913
Other steel bars (excluding alloy)	27,903	193,891
Alloy steel bars	1,589	15,563
Welding rods, electric	831	11,135
Plates, including boiler, not fab.	52,128	269,991
Plates, fab., punched or shaped	2,826	18,780
Iron sheets, black	1,843	13,502
Steel sheets, black	49,687	319,417
Galvanized sheets	8,741	51,011
Strip steel, cold-rolled	3,797	39,558
Strip steel, hot-rolled	6,038	55,467
Tinplate	50,179	375,658
Terneplate	283	7,133
Structural shapes, plain	23,331	214,191
Structural shapes, fab.	10,312	94,065
Sheet piling	1,540	12,154
Rails, 60 lb per yd and over	9,350	132,279
Rails, less than 60 lb per yd	991	5,484
Rails, relaying	1,183	17,949
Splice bars and tie plates	1,368	14,551
Frogs and switches	545	4,655
Car and locomotive wheels, tires, and axles	7,568	30,668
Seamless black pipe and tubes	3,390	18,158
Seamless casing and line pipe	24,751	172,909
Seamless boiler tubes	4,502	28,188
Welded black pipe	10,590	64,461
Welded galvanized pipe	7,829	48,056
Welded casing and line pipe	28,110	141,381
Other pipe and fittings	5,822	44,972
Plain wire	8,884	55,132
Galvanized wire	5,672	41,937
Barbed wire	9,215	42,423

	July 1949	First 7 Months 1949
Woven wire fencing	1,731	11,105
Woven wire screen cloth	318	2,958
Wire rope and strand...	1,350	8,924
Wire nails	3,446	18,571
Other wire and manufacturers	2,068	15,273
Other nails, incl. staples and horseshoe nails...	682	6,707
Bolts, nuts, rivets and washers, except railroad	1,568	17,618
Forgings	1,587	18,016
TOTAL	460,999	3,044,663
Other Finished Products:		
Tanks, complete and knocked down	9,258	75,536
Metal lath	306	4,301
Tin and galvanized hollow ware	147	1,635
Tin cans, finished or unfinished	2,661	23,384
Mall, iron screwed pipe fittings	415	3,821
Cast iron pressure pipe and fittings	1,793	26,280
Cast iron soil pipe and fittings	548	5,917
Iron castings and ingot molds	3,619	32,323
Sprocket and other power trans. chains	412	3,425
Other chains	444	3,850
TOTAL	20,113	182,774
Pig Iron	2,360	69,354
Ferroalloys	751	14,072
TOTAL	3,111	83,426
GRAND TOTAL ...	484,223	3,310,863
Iron and steel scrap.....	187,511	386,749
IMPORTS:		
Semifinished and Finished Products:		
Steel ingots, blooms, etc.	....	26,063
Wire rods	65	2,737
Concrete reinforcement bars	200	4,417
Hollow bar and drill steel	....	34
Other steel bars	65	17,811
Boiler and other plate..	322	23,955
Sheets, skelp, sawplates, n. e. s.	27	8,221
Tinplate, tagger's tin and terneplate	1	38
Structural shapes and sheet piling	834	111,543
Rails and fastenings.....	66	988
Pipe and tubes.....	240	5,250
Flat wire and strip.....	140	1,094
Telegraph and telephone wire	74	355
Wire rope and strand...	96	384
Nails, tacks and staples..	24	1,187
Die blocks and blanks..	5	648
TOTAL	2,214	210,549
Pig iron	....	77,729
Sponge iron	....	1,667
Ferromanganese (mang. content)	133	49,507
Ferrosilicon (silicon content)	29	549
Ferrochrome (chromium content)	195	2,133
Other alloys used in steel manufacturing	271	6,779
TOTAL	628	138,364
GRAND TOTAL ...	2,851	349,155
Iron and steel scrap....	52,359	984,421

Finished coils being removed from outside Roller Conveyor loop to storage or shipment. These have circled the loop several times, passing through the mill until reduced to thickness desired. Coils on inside loop are unfinished and are enroute to mill for processing.
Carrying
the heavy end of the LOAD

— is literally true of Logan Conveyors in the steel mill and in many other industries.

Conveyors move tons of heavy coils, sheets or bars safely and easily through processing operations, thereby releasing workers from slow, tedious, and *costly* hand-handling.

No matter what you manufacture, Logan handling equipment helps do the job at lower cost. Logan Co. is no "Johnny-come-lately." For 40 years Logan's superior engineering, construction, and dependability have been acknowledged by industrial leaders from coast to coast. Here's an invitation for you too, to join the countless plants who regularly call-in-Logan for their handling needs.

Send today for literature.

Logan Conveyors

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You protect your shipments of valuable steel sheets . . . metal parts and assemblies or finished products . . . from damage, moisture, dirt and dust, or rough handling . . . when you wrap them in rugged FIBREEN reinforced paper.

FIBREEN is flexible, easy to handle, economical. . . . Has served the steel industry for over 20 years. Let us tell you more about this outstanding protective shipping paper.

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Please send free sample of FIBREEN reinforced shipping-paper, and complete data.

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Canadian Steel Production For 1948 Sets All-Time Record

Toronto—Canadian manufacturers of iron and steel and their production report gross production value for 1948 at $2,251,392,204 which is a new all-time record and shows a gain of 21.4 pct over 1947.

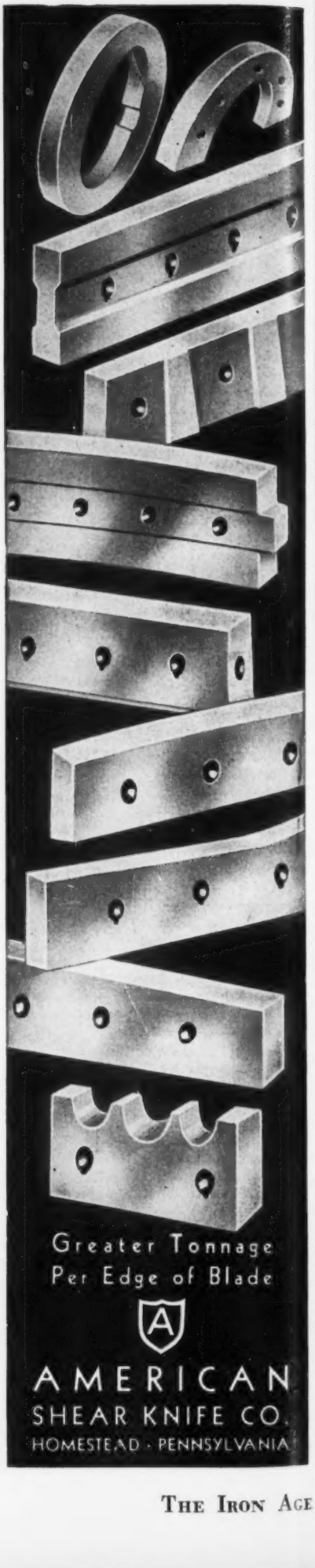
The following table shows the number of plants operating and gross value of their products for 1948:

	No. of Plants	Gross Selling Value of Products
Pig iron, ferroalloys, steel and rolled products	57	$282,241,595
Iron castings	222	121,963,932
Heating and cooking apparatus	93	53,672,083
Boilers, tanks and plate works	51	43,355,631
Farm implements	69	146,691,870
Machinery	339	228,859,310
Automobile	11	398,056,575
Automobile parts	138	138,267,833
Bicycles	12	5,346,243
Aircraft	11	43,757,582
Shipbuilding	74	111,212,428
Railway rolling stock and parts	38	237,397,786
Wire and wire goods	101	67,600,671
Sheet metal products	268	152,372,749
Hardware, cutlery and tools	292	87,971,308
Bridge and structural steel	26	65,907,067
Machine shops	516	25,283,172
Miscellaneous iron and steel	241	41,334,369
TOTAL	2,553	$2,251,392,204

Calls Pension Plan Dangerous

Chicago—J. J. Kehoe, head of Division 241, Chicago Streetcar Mens Union, AFL, declared in Chicago recently that non-contributory pension plans similar to those signed by Ford Motor and UMW are "dangerous and impractical."

Writing in the current issue of the union's journal, Mr. Kehoe points out that the pension plan his union has with CTA is maintained jointly by contributions from employees and the company. While CIO pensions call for a maximum of $100 a month including social security, the streetcar men's pension plan provides for a minimum of $75.00, plus social security, with no maximum sum specified. Some men, Mr. Kehoe said, will draw over $200.00 a month depending on seniority.



American Exporters Seen Little Affected by Devaluation

Pittsburgh—Competitive advantages enjoyed by foreign manufacturers due to devaluation of their currencies are not necessarily permanent, according to J. D. A. Morrow, president of Joy Manufacturing Co., world's largest producer of mechanical mining equipment.

In a letter to stockholders, Mr. Morrow said such developments as demands for higher wages abroad, gradually increasing costs of imported materials and "more rapid technological progress in the U. S. will be creating new export opportunities" for American producers.

Mr. Morrow pointed out that foreign subsidiaries of the Joy company will tend to offset effects of devaluation as far as Joy is concerned. Almost immediately after devaluation was announced, he said, the company's foreign subsidiaries began receiving additional active inquiries for Joy machines to be manufactured overseas.

Plans Structural Plant

Seattle—Construction of Bethlehem Pacific Coast Steel Corp.'s new structural steel fabricating plant on property recently acquired from Isaacson Iron Works will begin soon.

The structural shop will be 140 ft by 400 ft and will be equipped with forming, punching and shearing facilities for the fabrication of a wide range of steel structures.

Plant facilities will also include a new transmission tower, fabricating shop, 80 ft by 400 ft and a complete galvanizing plant 60 ft by 100 ft. It is expected that this shop will be ready for operation about May, 1950.

Bethlehem Pacific also now has under construction at its south San Francisco plant new tower testing frames which is the only facility of its kind on the Coast. These units will be capable of testing transmission towers having a maximum height of 150-ft which is the highest high voltage transmission tower now in use.

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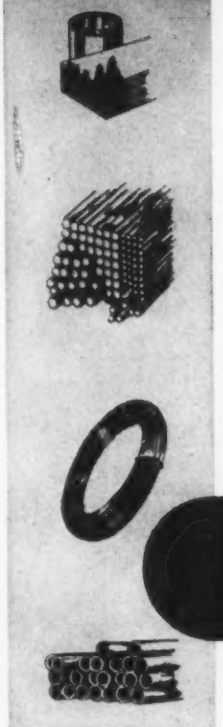

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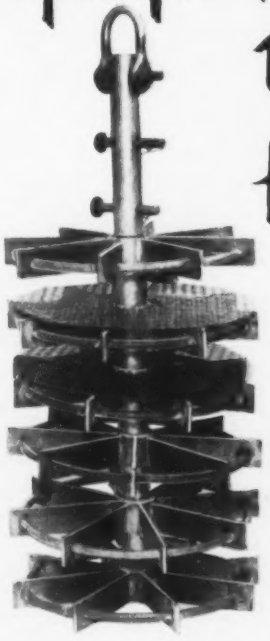

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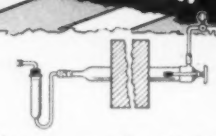

• The acid test for any product is how it stands up in service. Here is what leading metallurgists in the iron and steel industries say about McDanel Porcelain Combustion and Zirco Tubes: "Highly satisfactory in every respect" — "Never spall or blister"—"We run 8 to 10,000 carbon and sulphur analyses a month with seldom a failure."

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Reveals Plan to Revamp Niagara Falls Power Facilities

Washington—A 10-year plan for revamping power facilities at Niagara Falls so as to triple present power output without effect on the scenic beauty has been revealed in a Federal Power Commission staff report.

Estimated cost of the development would total between $308 million and $350 million, depending upon which of two plans were used. In either case, power output would be increased from the present capacity of 440,000 kw to 1,572,000 kw.

Included in the plans are proposals for (a) a lower Niagara unit in conjunction with the existing Schoellkopf station, (b) a Lewiston-Conners Island unit with intake near that island, (c) a pump storage unit with generating capacity near the Lewiston plant, and (d) control works in the river near the Erie outlet.

The commission study estimates that gain of 7.9 billion kw-hr would be absorbed by nearby areas of New York, Pennsylvania and Ohio in less than 10 years.

Strikes Cut Rail Revenue

Chicago—Railroads here are gloomy over the effect of strikes in the steel and coal industry. Railroad employment has already begun to feel the accumulated results of the current labor trouble.

The Baltimore & Ohio R.R. has estimated that if the strikes last through October, it will cost that railroad about $11 million in revenue, and the road has furloughed 11,000 employees since the coal strike began. Should the labor walkout continue, this road is expected to lay off 1500 more employees. The Illinois Central R.R. has estimated that a month long coal and steel strike would mean a revenue loss of $2,300,000 in coal and $800,000 in steel. The same losses respectively for the Chicago & Eastern Illinois R.R. is estimated at $360,000 and $115,000.

Will Combat Air Pollution; Requests an Expanded Program

Washington—An expanded federal program to combat air pollution has been requested by Federal Security Administrator Oscar R. Ewing, following reports by the U. S. Public Health Service that smog over Donora, Pa., last year caused 20 deaths and 5910 illnesses.

The Public Health Service was called into Donora in November 1948, following requests from state and city health officials and the United Steelworkers of America.

Federal health officials said that a weather inversion such as the one experienced at Donora occurs when a layer of warm air settles over the ground air, preventing the usual updrafts. Because the upper air is warmer, the lower layer remains stable as long as the upper air fails to move.

Lists Business Procedures

Washington—Procedures for doing business with the Atomic Energy Commission are described in a new booklet entitled "U. S. Atomic Energy Commission Contracting and Purchasing Offices and Types of Commodities Purchased." It contains lists of the supplies, materials and equipment being purchased by or for the AEC and its contractors, the addresses of the purchasing offices and agents, and instructions on how a business firm may be considered to receive invitations to bid.

Loans Available for Mining

Washington—Release of $15 million (50 million marks) in counterpart funds for loans to coal mine operators in Bizone Germany for capital expenditures has been announced by the Economic Cooperation Administration.

About $19 million (187 million schillings) was also released in Austria for industrial and agricultural development.

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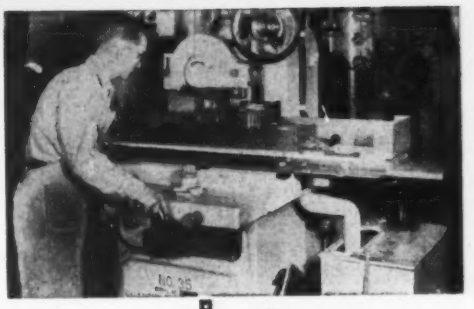

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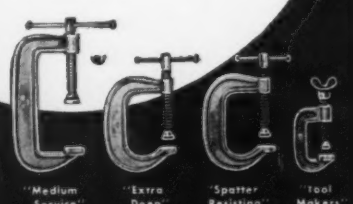

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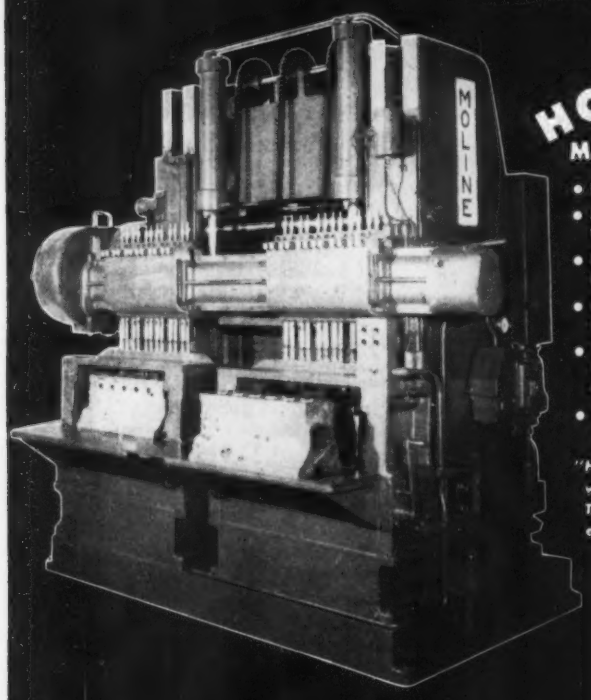

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Arrangements Completed For 2nd Metal Castings Conference

Lafayette, Ind.—The second annual Metals Casting Conference, sponsored by Purdue University in cooperation with the Michiana and Central Indiana chapters of the American Foundrymen's Society will be held this week on the University campus, Thursday and Friday, November 3 and 4.

More than 200 foundrymen from Indiana, Illinois, Ohio, Michigan, Mississippi, Wisconsin, Iowa, Pennsylvania and New York attended the meeting last year to discuss the latest developments and current practices in the metals casting field.

A discussion of foundry costs, together with methods of determining costs, and cost reduction, by experts in the field and Purdue staff members, will be an important feature of the 2-day program. There will be technical sessions on various aspects of metals casting, and a motion picture from the American Foundrymen's Society on metal flow in molds. Quality control in foundry work will also be discussed.

ISIS Chapter Elects Officers

Chicago—The Chicago chapter of the Institute of Scrap Iron & Steel Inc., held its annual meeting Oct. 12 at the Congress Hotel. At this, the annual election meeting, William Pohn of Pohn Iron & Steel Co., Chicago, was elected president of the group for the third consecutive year. First vice-president is Ellrud Mitchell of Chicago Metals Co.; second vice-president is Barney Silver of Silver Steel Co., Racine, Wis., and third vice-president is Ernest Krulewitch of Simon Krulewitch, Inc., Chicago.

Henry Rosenthal of Briggs & Turivas Co., Blue Island, Ill., was elected treasurer and Harvey Kaplan of M. S. Kaplan Co., Chicago, was elected secretary. The chairman of the executive committee for the coming year will be Harold Weinstein of Calumet Steel & Supply Co., East Chicago, Ind.

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• *News of Industry* •

NMTA Celebrates 50th Year

Chicago—A most timely topic was the golden anniversary theme of the National Metal Trade Assn. which held its 50th annual convention here at the Palmer House, Oct. 26 to 28. The theme, "Forging Ahead with 50 Years' Experience in Industrial Relations," came at an opportune time, as 1949 appears to be one of the peak years of labor unrest.

Among the major subjects covered in the 2-day meeting was the current economic situation, averting socialism by positive action, measuring the effectiveness of industrial relations programs, cost reduction, work simplification, collective bargaining, etc.

T. J. Morton, NMTA president and head of the Hoosier Cardinal Corp., Evansville, Ind., presided over the sessions. Among the prominent speakers were: Brig. Gen. Frank L. Howley, recent American commandant in Berlin; John Gall, Washington labor relations attorney who presented the case for the steel producers before the presidential fact-finding committee, and W. F. Rockwell, chairman of the board of Standard Steel Spring, Coraopolis, Pa. More than 1000 industrialists from all sections of the country attended the convention.

Wayne Granted Science Library

Detroit—Detroit will have a 50,000 volume giant library as a result of a recent grant from the Kresge Foundation to Wayne University.

The new Kresge Science Library will house Wayne University's Kresge-Hooker scientific collection, one of the most complete chemical libraries in existence. It is expected more than 800 science periodicals will be available for reference.

The new building will provide seats for 400 undergraduate students and 235 faculty members, industrial research workers, and students of science. Construction is expected to start in the near future.

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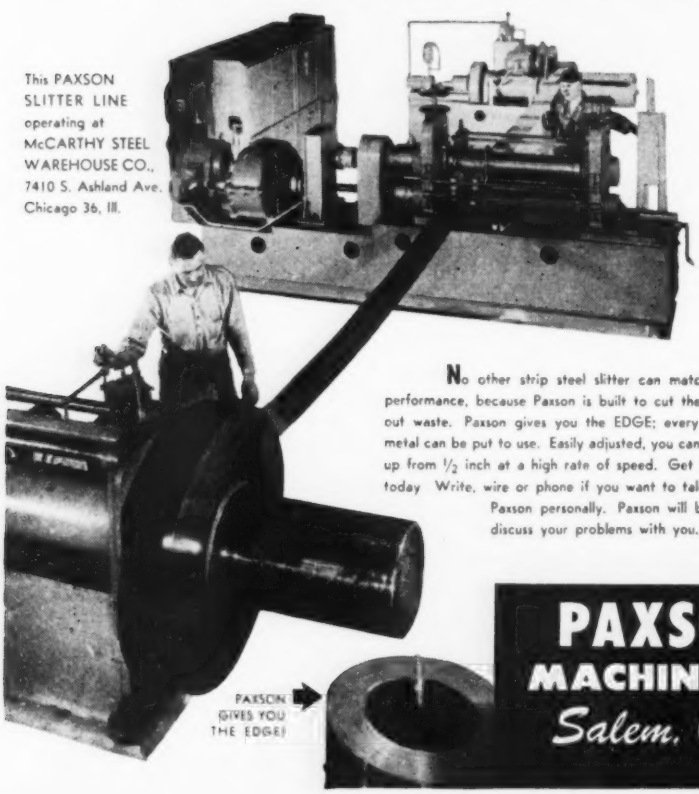
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FATIGUE CRACKS

Continued from Page 22

submit a written agreement to the Bureau of Naval Personnel not to resign during the course and upon completion of the course to serve in the naval service for a period of 2 years. Prior to carrying out these orders, directed to submit such a statement or otherwise decline the instruction by written letter and return these orders for cancellation."

The Navy, obviously, has learned nothing from the war. In the heat of battle, and without official sanction, was coined a code-word which stands unchallenged for being universally understandable and succinct.

"Snafu!"

Naught

Reader Charles C. Finn, the eminent aptronymist, is puzzled. Referring to your f.f.j.'s Global Letter (Sept. 29, p. 26) he writes: "It states that Belgian exports of steel to the U. S. in metric tons have shrunk, but nevertheless amount to 100,679,000 from February to July, inclusive. I have a copy of THE IRON AGE in which it is stated that we have not yet made 100 million tons of steel in any year. I am wondering why we bother to make any steel at all. If Belgium can do it so well, why not buy steel from them and save our ore, coal, etc., for some emergency?"

Might be a good solution to the steel strike. At least the brains department man, who edited the item immediately after writing a piece on the national debt, suggests it. Cipher happy lad, he—as *Time* would say.

Plated

R. T. Ferguson, Alcoa's chief plant metallurgist at Massena, is a constant and thorough reader of your f.f.j.'s usually reliable price pages.

"For the past year," he writes, "I have noticed that you have been listing chromium metal at about 1¢ per lb. Isn't this remarkably cheap chromium?"

When the automobile builders get hep to this price, a third that of steel, we expect that pure chromium motor cars will become commonplace. Buildings, even, may be built of the stuff. Market prospects, we should say, are dazzling.

Only mote in this vision is that your f.f.j.'s chromium price quotation is reasonably sure to have moved upward by the time this hits print.

Resume Your Reading on Page 23

Is Formica for you?

Formica Parts are at work in every type of Industry. Just to stimulate your own creative thinking on how Formica fits your production picture, some of the parts illustrated are identified here:

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2. Cable Guides used on Elevators.
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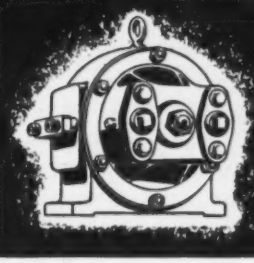

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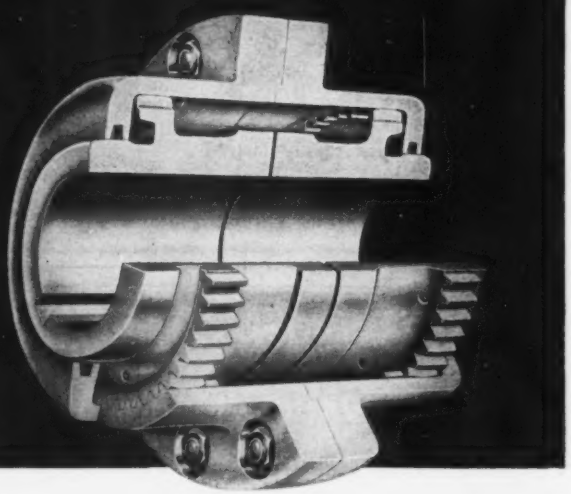

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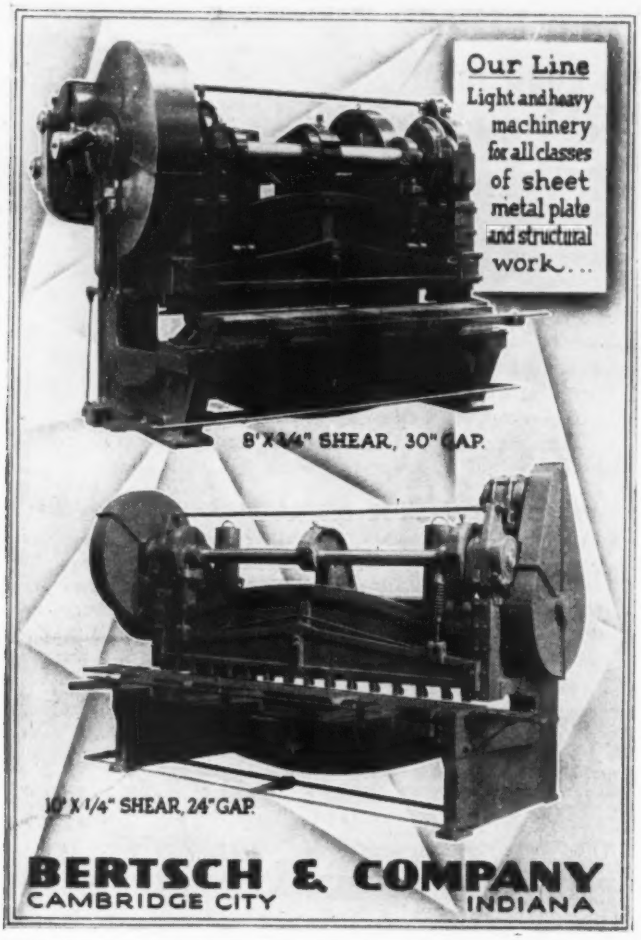
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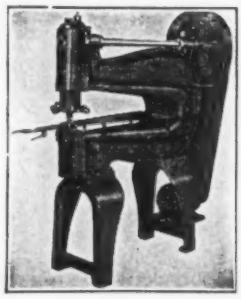

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Four, Five, Six, Eight Spindles • Work and Tool Rotating Type
GOSS & DE LEEUW MACHINE CO. KENSINGTON, CONN.

WETHERELL BROS. STEEL CO. ESTABLISHED 1870
WETHERELL BROS. CO.
251 Albany St., Cambridge, Mass.
C. R. Strip Stainless Steel
Tool Steel O. H. Specialties

GLOBAL LETTER
REVIEW OF WORLD MARKETS

Continued from Page 28

of component parts was to be introduced gradually.

The first trucks are now about to be placed on the market. Output is expected to be at the rate of about 100 per month. They are 8-ton vehicles with a hauling load of 14 tons, fitted with 6-cylinder motors. By 1951 it is hoped to manufacture all parts locally, 65 pct being turned out by F.N.M. and the remainder by specialized workshops.

Argentina Suggests Ad Valorem Duties on Manufactured Products

Buenos Aires—The Brazilian Commercial Office here reports that the Argentine Chamber of Metallurgical Industries has submitted a memorandum to the National Economic Council regarding the critical situation arising out of recent international trade agreements, particularly that with Great Britain.

The basic causes for alarm are: High cost of raw materials; increased charges for labor; social services and liquid fuels; subsidized foreign competion, insufficient customs' protection and low exchange rates for imports; inadequate supplies of electrical energy which hamper installation of machinery and the introduction of modern processes; and the difficulty in obtaining import licenses for essential machinery and equipment.

The chamber suggests the introduction of ad valorem duties on manufactured products imported and reduction of duties on raw materials. It also asks that all imports be subject to prior license and to proof that similar articles are not produced in the country, quotas being fixed for goods which are manufactured in the country in insufficient quantities for domestic needs. It is recommended that exchange priority be guaranteed for imports of machinery, raw materials and other necessary elements not obtainable in Argentina.

Resume Your Reading on Page 29

TIN PLATE

COP-R-LOY PIPE-SHEETS

Ductilite

THE MODERN TIN PLATE

WHEELING STEEL CORPORATION

WHEELING, WEST VIRGINIA

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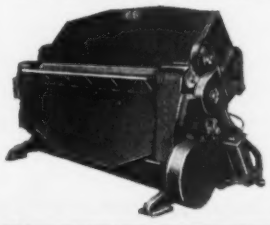

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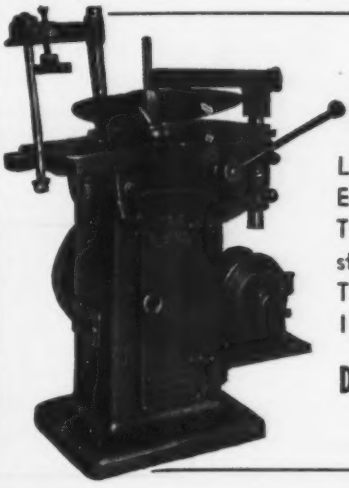

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Three sizes. Keyways 1/16" up to 1¼".

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National High Duty Upsetting & Forging Machines, guided overarm heading slide, susp. slides 1½", 2", 3", 4" 5"
Ajax Upsetting & Forging Machines, susp. slide 1¼", 2½"
Ajax & Acme Upsetting & Forg. Machs. not susp. slide, ¾", 1", 1½", 2½", 3"
Williams White Bulldozers #23, #4
Drop Hammers 800, 1000, 1200, 1500, 2500#
Trimming Presses #59¼ Toledo Tie Rod; other trimmers 55 to 200-tons
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Open Back Incl. Presses 8 to 60-tons
Solid Back Presses 20 to 100-tons
#94-A Toledo S.S. Double Crank Tie Rod Press Bolster 40x36"
Bliss Knuckle Joint Press 250-tons
Nazel Air Forg. Hammer #6-B, Cap. 7" sq.
Bradley Hammers, Cushioned Helve, Upright & Compact
Single and Double End Punches, wide variety caps. & throat depths
Geo. Ohl Squaring Shear, Cap 10' ¼"
Ryerson Serpentine Throatless Shear ½"
Bending Rolls 8'-⅜", 13'-⅝"
Niles Plate Leveller 60"x½"
Landis Threading Mach. 1" two spin., lead screw, Lanco Hds., single up to 4"

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Diamond Face Grinder, Segment Wheel 36" Table 84x24", Hydraulic operated
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THE CLEARING HOUSE

News of Used, Rebuilt and Surplus Machinery

Steel and coal strikes hit chemical equipment sales

Auction competition discussed by Chicago MDNA

Machinery exports continue strong

Coal, Steel Strikes Slow Rebuilt Chemical Equipment

New York—Used and rebuilt machinery for use in the chemical industry is experiencing fluctuating demand. Chemical production items such as kilns and dryers were in demand after July. Business in these and kindred items was reported to have been good from August through the middle of October. Business from the middle of October to the first part of November has again fallen off. It is now felt that the coal and steel strikes are slowing down what was going to be a moderately prosperous last quarter.

Chicago MDNA Dealers Discuss Auction Competition

Chicago—The regular monthly business meeting of the Chicago chapter of Machinery Dealers National Assn. was held on Thursday, Oct. 20, at the Steak House. Approximately 30 MDNA members were present. The question of industrial users buying machinery from dealers instead of auctioneers was the topic of the discussion led by chairman Edwin Johnson.

In the past year machinery sold at public sale has been the chief competition of the regular established used machinery dealer. The Chicago group agreed that they would actively attack this competition in order to show used machinery buyers the advantages in buying machine tools and other machinery from the regular dealers. Active promotion and advertising campaigns will be used as part of this program.

Machinery Exports Not Yet Affected by Devaluation

New York—Machine tool dealers whose primary activity is the exporting of used and rebuilt production equipment report that so far the devaluation of European currencies has not had any market effect on current business activity.

The reason given for the sustained activity is the fact that most of the orders had been negotiated and contracted five to eight months ago. Current monthly shipments are now fulfilling

Turn to Page 190

MDNA CHAPTER SCHEDULES

Chapter	Date	Time	Place
Detroit	Tuesday, November 8	7:00 p.m.	Hotel Fort Shelby
Chicago	Thursday, November 17	6:30 p.m.	Steak House
New York	Monday, November 28	6:30 p.m.	Cavanaugh's 23rd St.
Philadelphia	Tuesday, November 29	6:30 p.m.	Warwick Hotel
Los Angeles	Tuesday, November 29	6:30 p.m.	Los Angeles Elks Club

SIMMONS NEWS

ENGINEERED Machine Tool REBUILDING

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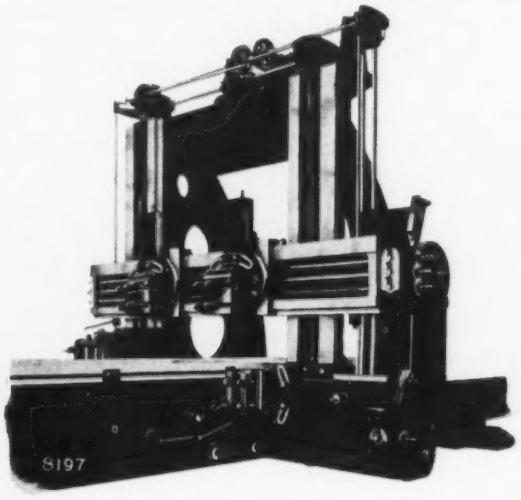

60" x 60" x 16' BETTS (Consolidated) Heavy Duty Planer with forced feed lubrication. Power Rapid Traverse, two rail heads and two side heads, one flat way, one vee way. 230 Volt DC Planer Type Motor and Reversing Control with pendant push button station. Inspect at Albany.

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Infinite No. of Feed Rates
Weight about 50,000 pounds
No. 60 Natl. Std. Taper

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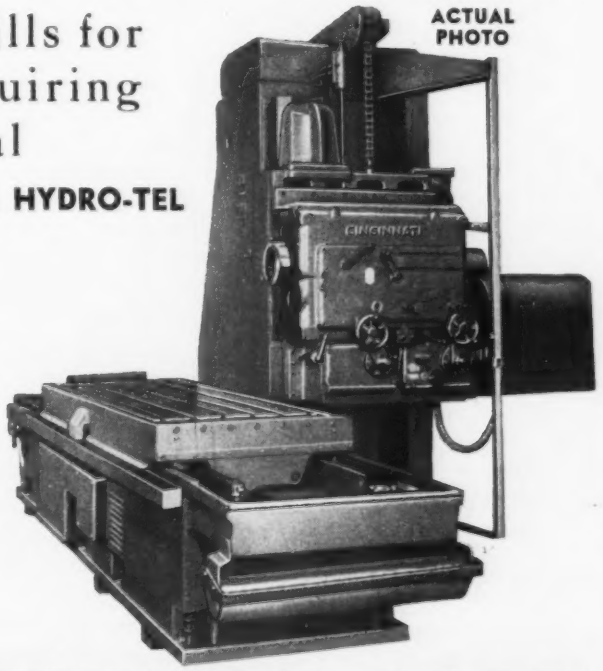

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48" x 48" x 10'

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LUCAS #41, 3" bar, Table Type, "Precision", Latest
LUCAS #43, 5" bar, Table Type, "Precision", M.D.
NILES-BEMENT-POND 5", 8" bar, Floor type, M.D
UNIVERSAL 3" bar, high speed, latest type

BORING MILLS—Vertical
BULLARD 12", 16" 6 Spin. Mult-Au-Matic, Type D, latest
BULLARD 24", 36", 42" "Spiral Drive," Latest Type
KING 62", 2 swivel heads, PRT, M.D.
NILES 100", 2 swivel heads, PRT, D.C., Motor Dr.

DRILLS—Miscellaneous
AMERICAN 4' arm 11" col., "Hole Wizard", Latest
LELAND & GIFFORD #2 LMS 6 spindle, Latest
NATCO 4 Al. 30 spindle, Multiple, Latest Type
PRATT & WHITNEY 1Bx50" Deep Hole, Latest

GEAR CUTTING EQUIPMENT
FELLOWS 61A, #61, #7, #7A, #72, #75, #77, #Z, #6Z2, High Speed Gear Shapers, latest type
GLEASON 3", 12" straight bevel generator, Latest
GLEASON 24", 37" Bevel Gear Planer, Motor Drive
GOULD & EBERHARDT 12H, 96H, Hobber, m.d.

GRINDERS—Cyl.—Plain & Univ.
BROWN & SHARPE #1, 2, 3, 4, Universal, Latest
BROWN & SHARPE #13 Univ. Cutter & Tool, Latest
LANDIS 4x12, Type H, Plain Hyd., Latest Type
NORTON 6x18", 10x72", 14x36", Type C, Plain, latest
NORTON 6"x30", 10"x36", type C, Pl. Hyd., latest

GRINDERS—Miscellaneous
BARBER COLMAN #3, 4, hob sharpener, latest type
CINCINNATI #2, #4 Centerless "Filmatic," latest
HEALD 72A3, 72A5 "Gagematic," Internal, Latest
HEALD 75A, 72A3, 72A5, 74, Internal, latest
LANDIS #12 Centerless, Hydraulic, Latest Type

GRINDERS—Surface
BLANCHARD #11, 16" chuck, Latest Type
HANCHETT Series 300, 12"x48" Vert. Sp. Hy. Latest
HANCHETT #36 Vert. 36" Mag. Chuck, Latest
HANCHETT Series 120, Blano Horiz., 30"x120", Latest
HEALD 25A—Rotary—16" and 30" chuck, hyd., latest
THOMPSON 12x12x24 Type B Hyd., Latest Type

LATHES—Engine & Mfg.
AMERICAN 36"x360" centers, 2 carriages, motor dr.
LODGE & SHIPLEY 14"x30", 16"x30" Centers, latest
MONARCH 10"x20" centers, Model EE Timken, latest
MONARCH 12"x30" Centers, 12x54" Centers, Model CK, Timken Bearing, Latest Type
MONARCH 22"x150" centers, 3 carriages, Timken Bearing, Model CM, motor drive
NILES 30x50" Boring, Timken, Latest Type
NILES 60"x55' centers, 2 carr., PRT, Latest
PRATT & WHITNEY 16"x30" Centers, Latest

LATHES—Turret
BARDONS & OLIVER #5, #7, Timken Latest Type
FOSTER #4FU "Fastermatic" Timken, Latest
GISHOLT #1L, #2L, #3L, Universal, Timken, Latest
GISHOLT #3, #4, Univ. TIMKEN, Latest Type
JONES & LAMSON #3, #5 Univ., Timken, Latest
MOREY No. 2G, No. 3, No. 4, Timken Bearing, latest
WARNER & SWASEY #2A Univ. Timken, Latest
WARNER & SWASEY 4A Universal, Timken, Bar and Chucking, (Nov. 1947)

MILLING MACHINES—Plain
BROWN & SHARPE 2B, 3B, Timken, Latest Type
CINCINNATI 4-36, 2-18 Hydromatic, Simplex, latest
KEARNEY & TRECKER 1#18, 1401, Latest type
KEARNEY & TRECKER 2H, 3H, 4H, 5H Timken, latest

MILLING MACHINES—Thread
LEES BRADNER 12"x54", Model HT, Latest Type
MOREY 12"x30" and 60" centers, Latest Type
PRATT & WHITNEY 6x60", Model C, Latest Type

MILLING MACHINES—Universal
BROWN & SHARPE 2A, 3A, Timken, Latest Type
KEARNEY & TRECKER 2H, Timken, Latest Type
VAN NORMAN #12, #26, #36, Timken, Latest Type

MILLING MACHINES—Vertical
BROWN & SHARPE #2B Timken, Latest Type
CINCINNATI #2, Dial Type, Timken, latest type
GORTON #8D, #8½D, high speed, latest type
KEARNEY & TRECKER #2K, #3H, Timken, latest

PLANERS
BETTS (CONSOLIDATED) 84"x92"x16', 4 heads, Box Table, Power Rapid Traverse, D.C., M.D.
BETTS (CONSOLIDATED) 108"x84"x50', 4 heads, Box Table, Power Rapid Traverse, D.C., M.D.
NILES "Time Saver," 42"x42"x14', 3 heads, Rapid Traverse, A.C. vari-voltage drive, Latest
NILES 108"x84"x42', 4 heads, Power Rapid Traverse Box Table, D.C. reversing motor drive

SCREW MACHINES—Automatic & Chucking
CONOMATIC 2¾"—6 spindle, Latest Type
GOSS & DeLEEUW 6"x6¾" Auto. Chucker, Latest
GOSS & DeLEEUW 8" auto. Chucker, 5 spin., Latest

MISCELLANEOUS
BARNES #172, 306H, 307, 307B Vertical Hone, Hydraulic, Self-Oiling, Latest Type
CINCINNATI 1-30, 3-30, Duplex Vert. Surface Broach, Double ram, Model ER Hyd., Latest Type
CINCINNATI Series 300, ½"x8'6" Press Brake, MD
HENRY & WRIGHT 50 ton Dieing Press, M.D.
LAKE ERIE 500 ton Vertical Hydraulic Press, latest
MICHIGAN 1708, 1712 Universal Reliever, Latest
VERSON #206, 10 gauge x 96" cap. Press Brake, latest

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Continued from Page 186

the various contract requirements and are responsible for the present activity level.

Business at this time, as reported by dealers doing exporting, is said to be from 20 pct below to 50 pct above last year's rate. Factors such as the customer's ability to get import licenses and dollar exchange affect the dealer's successfulness. Another factor is the firm's aggressiveness in finding new business. Several machinery firms find it essential to keep contact men in Europe in order to dig up new orders.

European countries are considered to be the main foreign purchasing potential although a small amount of business is transacted with South American countries. During the past year industrialists in countries such as Argentina, Brazil and Uruguay have shown an interest in the purchase of used machinery for plant expansion and modernization. Government regulations in these countries insist upon the purchase of new machine tools and grant licenses of entry only on fulfillment of this condition. Purchasers in many instances have circumvented this regulation by contracting for rebuilt equipment and having it billed and listed as new. In this manner a small flow of rebuilt machinery has entered these countries from the United States.

Speculating on export prospects for the near future, dealers' opinions range from hopeful to pessimistic. Those with the positive outlook hope that devaluation will allow enough export of European products to build up a dollar exchange. These dealers feel that there is still a definite need and want overseas for the diverse line of rebuilt American machine tools.

East Coast Presses Move

New York—East coast machinery dealers report that all types of presses have been moving during the last part of October. Local buying of small footpresses for jewelers' Christmas business to the standard industrial presses of from 10 to 80-ton capacities have been selling during this period.

Resume Your Reading on Page 187

GUARANTEED

42" x 24' c/c N-B-P Lathe, M.D.
24" x 168" c/c Sidney 16 sp. Lathe, 1942
16" x 54" c/c American Pacemaker, 1942
3—#26 Kempsmith Universal Millers, 1944
#4 Cincinnati Plain Hi-Power Miller
54" Colburn-Consolidated Vert. Bor. Mill, PRT.
36" Rogers Vertical Turret Lathe, 1942
#1-18, #3-24 Cincinnati Prod. Millers
#5 Gisholt Turret, bar & chuck, 1943
14" x 36" Landis Universal Grinder, 1942
12" x 36" Norton Universal Grinder, 1941
6" x 30" Norton Plain Grinders
5" Sellers Horiz. Mill, 12'6" to brg., 1943
16" American V-ram Shaper, M.D.
24", 12" Dill Trav. Hd. Slotters
30" x 30" x 8' N-B-P Planer, direct M.D.
24" x 24" x 4' Liberty Shaper—Planer, M.D.
7" Peerless Hydracut Saw, 1942
#6 Mitts & Merrill 3½" Keyseater
6000# "Pneumatic" Air Drop Hammer, 48" x 60"
#2B Nazel Hammer, M.D.
4" Oster "Rapiduction" Pipe Threader

THE O'BRIEN MACHINERY CO.
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BORING MILL, Vert. 14' Niles, 2 Hds., M.D.
BRAKE, Press 36' x ½", 60" throat, Late
BULLDOZER, No. 4 Williams & White
FORGING ROLL, No. 5 Ajax, Air Clutch, M.D.
HAMMERS, Pneumatic Nos. 4B & 6B Nazel
HAMMERS, Steam Drop, 2,000# Chambersburg
MILLER, Ingersoll, 36x48x16', 3 Hds., M.D.
MILLER, Vert. No. 4 Kempsmith, table 18" x 76"
PLANER, O.S. 72" x 72" x 16' Cinc. Hypro, '43
PRESS, Hyd., 250-Ton Chambersburg, 30" x 36"
PRESS, No. 59 Toledo, Str. 12", Bed 30" x 30"
PRESS, No. 59¾ Toledo Str. 14", Bed 36" x 37"
ROLL, Bending, 10' x 1" Wickes, Pyr. Type
SHEAR, Plate, 132" x 1½" Morgan, 26" Throat
SHEAR, Plate, S-6156 Pexto, 156" x ⅜"
SHEAR, Plate, No. 4 H&J, cap. 10'x¾", M.D.
STRAIGHTENER, 17-Roll McKay, 54"x4¼"
STRAIGHTENER, 48" American, 13-Rolls, 2¾"
UPSETTERS, 6" Ajax and 2" Acme

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AIR-OPERATED DUMP CARS
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Cinn. 6" x 18" Plain Hyd. Grinder.
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25 TO 40 TON CAPACITY
GASOLINE • DIESEL
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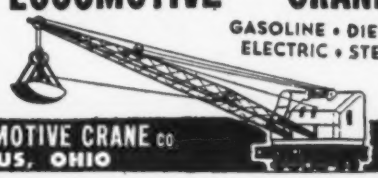

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If it's RIVETED you KNOW it's safe

Dear Customer

by

Jack R. Hight

SURE WINNER—Week in and week out the eyes of IRON AGE's readers find their way to that page up in the front of the magazine called Newsfront. That page of hot, late news of basic importance is supercondensed and breezy, but it is must reading in the metalworking industry.

It takes a lot of journalistic enterprise to make that page effective. The man in the New York news desk that edits it and puts it together each week drives all the staff men—up through the editor—incessantly. His goal is to have everything of importance on his desk in brief, pithy form on Monday morning when he puts that page together.

Frequently he persuades the regional editors to give him brief previews of coming articles that he can use in Newsfront. At other times he gets shorties (he calls them squibs) from Washington and Detroit, and from the steel mills that have yet to find their way into the daily newspapers.

He does such a powerful job that one of the famous news weeklies (name furnished on request) which goes to press 36 hr after IRON AGE comes out, has an average of 1.3 items a week borrowed from Newsfront for its own hot news section. We think that a tribute of no mean importance.

There is a constant flow of inquiries about those new items previewed in Newsfront. Sometimes we can oblige with full information. At other times because we really enterprised an item, we have to tell our readers that they will have to wait for an official announcement from the company—or for a later article in IRON AGE that will give full information.

We can hardly pass this by without mentioning that once in a while the response from readers to one of those four line items up in the front of the book compels the editors to get off their resting places and get more information about an item that they thought was a closed book. That is a part of the struggle that the editorial department goes through each week, trying to differentiate between what the reader wants from his magazine and what the editors think he wants.

We have been wanting for a long time to talk at some length about those proud editorial features up in the front of this book. We have lacked courage. Perhaps our position back here as the tail end club, fighting a rear guard action, has made us unduly humble. We are going to go ahead in the future and just talk about what is in front of IRON AGE as if we were up there ourselves.

UNIVERSITY OF MICHIGAN LIBRARIES

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- ★ Have high impact values.
- ★ Give a complete range of tensile properties with high ductility.

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Manganend 2M	85-105,000	100-125,000	10-20	15-20
Nickend 1	62- 69,000	70- 80,000	25-30	50-60
Nickend 2	65- 75,000	80- 90,000	20-30	45-60

ARCOS Low Hydrogen Electrodes are recommended for welding:

- ★ Low alloy cast steels.
- ★ Low alloy high tensile strength rolled steels.
- ★ High carbon steels.
- ★ High carbon to mild steels.
- ★ Free machining steels.

Send for ARCOS Bulletin 1249 containing more specific information on the use of ARCOS LOW HYDROGEN ELECTRODES.

ELECTRODES • COILED WIRE • BARE ROD

YOUR FASTENING JOB MAY CALL FOR A "SPECIAL"

The fastening items shown here are all "specials"—that is, each was specially designed and manufactured to meet a particular need. Each one does a more economical, more efficient job than a standard fastening could possibly do.

These "specials" are representative of the hundreds of types of unusual fastenings being turned out continually at Bethlehem's Lebanon, Pa., plant. Fastenings with hook heads . . . with curved or double shanks . . . with forged-on washers . . . long, thin fastenings . . . chunky fastenings—Lebanon Plant makes them all. And in addition, we manufacture a complete range of standard items: machine and carriage bolts, nuts, rivets, spikes, etc.

Next time you encounter a difficult bolting job, consider using a "special," instead of a standard fastening. The recommendations of our engineering staff are yours for the asking.

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Editorial

Who Pays for Pensions 7

News Interpretations

Newsfront 11
The Iron Age Summary 15
Global Letter 28
Machine Tool Highspots 32
On the Assembly Line 40
The Federal View 44
West Coast Progress Report 48

Special Features

Fatigue Cracks 20
Iron Age Introduces 22
Free Publications 34
New Production Ideas 35
The Economic Side, J. S. Lawrence 122
Dear Editor 178
The Clearing House 194

Technical Articles

Radioactive Isotopes in Metallurgy 77
Transverse Tests on Meehanite Iron Beams 83
New Books 86
Submerged Arc Welding Coil Ends 87
Growth of Cast Iron 88
Xeroradiography 91
Ram Trucks Simplify Coil Handling 92
ASTE Montreal Meeting 94
Gear Cutting and Testing Discussed by AGMA 97

Spot News of Industry

Murray Scores Double Triumph at CIO Meet 111
Detroit Steel To Purchase Portsmouth 112
Steel Actuaries Burn Midnight Oil 113
Fabricators See Much Building Overdue 115
Industrial Shorts 116
Dates to Remember 117

Markets & Prices

Market Briefs and Bulletins 131
Nonferrous Metals Outlook 132
Nonferrous Prices 133
Iron and Steel Scrap Market 134
Iron and Steel Scrap Prices 136
Comparison of Prices 138
Steel Prices 140
Pipe and Tubing Prices 141
Alloy Steel Prices 142
Warehouse Steel and Pig Iron Prices 143
Ferroalloy Prices 144

Index to Advertisers 208

Dear Customer 209